

# THROUGH THE AMAZON RUBBER COUNTRY TO IQUITOS.

*Special Correspondence of "The India Rubber World."*

AS far as topographical appearances go, a thousand miles of the upper Amazon does not differ materially from the thousand miles of lower Amazon. The North American traveler to Brazil who has ascended the hundred miles of the delta to Pará has seen from the deck of the moving ship precisely the same panorama of low-lying dense tropical forest fringing a broad yellowish band of water that extends like a ribbon under a bright hot sky in its tiresome way over two thousand miles due west. The one feature, however, which strikes one as remarkable, is that the further toward the source one gets, the bigger the river seems to grow. It at least impresses the traveler as widening. We know that our steamer draws over ten feet of water, and the Indian pilots say there is sufficient depth for an ocean steamer of eighteen feet draught, even in this—the dry—season.

There are but few towns on the upper Amazon. Such as do exist are generally composed of a store and a row of huts like barracks, which are almost always located on some of the little affluents or tributaries, so that the boat must leave the main river and thread its way up a narrow and not always deep channel for from six to fifteen miles to make a landing. It appears to have been the practice of the Indians to avoid settlements on the main stream, preferring, for reasons proper enough in their days, to conceal their villages, and the custom is adhered to by their descendants, who are now the principal inhabitants. Perhaps another reason is that they were unable to find any sufficiently high ground on the banks of the main stream.

Unfortunately for the present trade, the capital city of Manáos is located some six miles off the Amazon proper, upon the Rio Negro, which is itself as large as the main river at that point. In consequence of this want of foresight, the immense traffic down stream from the large affluents of the Amazon is compelled to discharge and reload cargo at Manáos for clearing-papers, the custom-house for the State of Amazonas being located there.

As indicating the absence of proper information in regard to the interior country, a recent Government publication issued by the "Bureau of the American Republics," at Washington, contains an illustrated article which represents Manáos as an Indian village, showing only a few thatched huts and canoes,—altogether a most absurd caricature on the capital city of Amazonas, containing an intelligent population of some 30,000 to 40,000, doing an extensive trade with North America and the interior, and from whose port steamships sail directly to New York, Liverpool, and other points weekly. There is not a thatched cottage in the place, but quite a number of three- and four-story business blocks, numerous store-rooms, a theater, Cathedral, and *palacios*, the hill-side and suburbs being dotted with tasty cottage residences of cultivated people. There is also a hotel in which French cooks are employed,

the proprietor of which will charge the traveler as much as the Fifth Avenue in New York city. There is some agitation about removing this capital city lower down on the main river to Parantins, yet it will hardly be accomplished, as the harbor is superior to any that could be found in the Amazon.

The Brazilians have a capricious way of changing the names of the rivers, as they do their governors and the streets of their cities. Some of the recent geographies and maps from Rio indicate the Amazon as only that part of the river between Manáos and the sea that flows north of the island of Marajo; all that portion west of the junction with the Negro is marked as the Solinoes; yet despite these makers of rivers on paper, the mighty Amazon will retain its claim to original distinction from the very head waters at the base of the Andes to the sea, and at the Bocca its old-gold colored waters force a path for a hundred miles over the bosom of the blue ocean, depositing its sands where will some day perhaps arise another continent, or extend the Amazon valley other leagues to the east.

Though the "Amazon" was ostentatiously declared free to all nations in 1866, yet few seem to know that the decree of Dom Pedro II. literally applies only to what is known as the Amazon proper. The numerous and important tributaries with their separate affluents, each equal in size to the upper Amazon,—and far more valuable in natural resources than the main stream,—are not yet free to all nations, and can be navigated only by ships carrying the Brazilian flag, unless negotiations have been made by treaty, granting certain privileges in that direction. When one remembers that there are upwards of 50,000 miles of steam river navigation in the Amazon valley, less than 5000 of which is included in the main stream, the importance of the restriction will become apparent. All of the tributaries are navigable for the largest boats. Among these may be named the Tocantins, nearest to Pará, which extends southwardly to an undeveloped region for nearly 1000 miles. Above this the clear waters of the Topajos from the mountains of the far southwesterly interior enter the Amazon at the American colony of Santarem. The Madeira is navigable for 500 miles to the great falls, where canoes take cargo to the interior of Bolivia. The Negro, on which Manáos is situated, extends in a northerly direction, its numerous tributaries reaching into British Guiana, Venezuela, and Colombia. The Purus, which is said to be wonderfully rich in undeveloped rubber, is navigable into Bolivian territory. The Javary is the dividing line between Brazil and Peru, and is becoming one of the most prolific sources of good rubber, of a fine quality, as also is the Jurua, into all of which it will be necessary to navigate to collect rubber and distribute supplies. As a matter of fact but little crude material is handled on the main river. Pará, being the Gate City, and quite jealous of the growth of Manáos as an inland port, and desiring to retain its control

of all the rivers, will insist upon the letter of the law which locates *Manáos* on a "tributary," and also names the "*Solínões*" as another affluent of the Amazon proper, restricting the free navigation to *Pará* and the lower Amazon.

It is one of the curious features, to a North American traveler on the Amazon, to find each State government a sovereignty, so that vessels going from one State to another are subjected to the same restrictions as if coming from a foreign port. Another of the difficulties attending this navigation is that the Brazilian laws require all vessels carrying their flag to be officered and manned exclusively by citizens of Brazil. The ever-present and always hungry "Custom" officials, health and port officers, swarm about every ship, even in the far interior, like sucker fish. The existence of the government depends upon the revenues exacted from the exportation of indigenous products, supplied to foreign ships and merchants, which bring goods on which import duties are charged greater than those collected by any other government on earth. In order to augment their income, the petty officers resort to the lowest tricks, imposing fines and penalties for the most trivial and unintentional violations of their tyrannical regulations. This is especially the case where the ships of other nations have contracted with the Brazilian Government for certain services, and for which they receive a subsidy.

It is far better, therefore, that all foreign vessels desiring to come to the Amazon should sail proudly under their own flag, declining all the so-called aids in the way of Brazilian subsidies, which are nearly always returned to them in the way of fines and penalties, and by all means officered by competent men of their own nation, being wholly independent of the inefficient, lazy *Braziliero*. The Amazon Steamship Navigation Co., limited, with a cash capital of over £650,000, owned in London, but ably managed by English gentlemen in *Pará*, are sadly crippled because of their being under the Brazilian flag and subject to Brazilian officials. Yet in the face of innumerable annoyances the company are doing a profitable business. A prominent official informed me that if they could officer their boats with English captains there would be an increase of 25 per cent. in their earnings annually, because the Brazilian officers are not only slow as a rule, but incompetent generally and often untrustworthy.

There are always exceptions, and I am glad to be able to record an illustration in our own commandante, who is indeed a notable and honorable exception to the rule. I am particularly fortunate in having sailed under Commandante Carlos Ferreira, a Portuguese navigator who is universally known throughout the length of 2000 miles of the Amazon, as not only the most competent but the most courteous officer in the Amazon company's service.

The further one goes up the Amazon, the less one sees of the African and Portuguese, and more of the Italian and Spaniard. The passengers are generally of that class that go up the tributaries at this season to manage the stores that furnish supplies for the rubber-gatherers.

The Rio Javary is the dividing line between Brazil and Peru. The first town, or rather the site for a proposed

town at the mouth, is appropriately named *Esperanza*, or "Hope." It may truly be said of those who ascend this river to remain long in its dreadful malaria: "All ye who enter here, leave Hope behind." The Javary region is a most valuable rubber territory, and probably for the same reason it is also most productive of the malignant type of fever. The Javary has the appearance of a very important business stream, there being more activity in the way of steam launches, canoes, and trading houses than we had seen in the preceding thousand miles of the main river. It reminded me of the rush and enterprise shown in the oil regions of Pennsylvania, where everybody was busy and contented, even in distress, being buoyed with a hope of becoming suddenly rich.

In three days more of this monotonous voyage, tired and anxious, we are gladdened by the voice of the steam-whistle, announcing our approach to *Iquitos*, in Peru.

Of the alleged population of 6000 in this city, the white element, though numbering not more than one-fourth of the whole, are the controlling spirit, doing a considerable business in supplying the country, by means of steam launches and innumerable canoes, with goods in exchange for rubber. The rubber trade is, indeed, the great mainstay of business of this valley, from the mouth of the Amazon all the way up for 3000 miles. Ocean steamships drawing fifteen to twenty feet of water may come up the main river to the mouth of the tributary upon which *Iquitos* is located, and during nine or ten months of each year the largest vessels of the Amazon Steam Navigation Co. come into the port of *Iquitos*. Vessels now ply regularly between New York and Liverpool and *Manáos*; if *Iquitos* were more favorably situated, they might as well extend their voyages up the river, saving considerable handling of cargo and proportionately reducing expenses. The freight charge per ton from New York to *Manáos* is now about \$10, while to *Iquitos* it is \$40 per ton.

There is much in the conditions here to tempt Americans to extend their trade in this direction. This portion of the Amazon river is the richest of all in the natural production of rubber. Other productions of the soil abound, while the wealth of gold is probably beyond the wildest dreams of prospectors up to date. The Brazilians are more energetic than are the Perunas. Probably by reason of their experience they understand better the handling of rubber, which has profited them greatly, and now that their own territory is becoming more fully occupied, they are beginning to invade the upper tributaries of the Amazon in great numbers. Only a few months ago a colony of Brazilians established themselves on a river of Peru, to operate in rubber, and if they should be successful, the result must be to bring to the upper region many thousands of workers from the almost-exhausted fields below.

I came here indorsed to Don Carlos Moreilles, a French gentleman who has spent twenty years in active business in this country, accumulating a large fortune. He was educated in New York city, has traveled extensively, even in Palestine and up the Nile, and is altogether a man of wide culture. With his brothers he is still actively engaged

in the Upper Amazon trade, having branch houses in Pará and in France and the United States. His ability is recognized throughout this country, and he is consulted on all matters of public importance by the Prefect of Iquitos. He expects to attend the World's Columbian Exposition,

extending his travels to different parts of the United States, and North Americans seeking to extend their business to this section would do well first to consult him.

J. ORTON KERBEY.

Iquitos, Peru, August 14, 1892.

## HOW TO KEEP RUBBER GOODS IN STOCK.

By James G. Kinne.\*

THE methods of retail dealers are many, but the best way to select merchandise and distribute it to meet the ever-increasing wants of the fastidious multitude is still a difficult question to solve. The retailer may possess keenness of intellect, and labor long and strenuously to perfect his method, and yet discover daily how his system can be improved. In this unequaled age of 1892, incessant vigilance is needed to keep one out of the rut and in the van. It is a race in which the laggard is left, and who falters fails. One must not only be up and doing with his might, satisfying the demands of to-day, but with unerring foresight anticipate what is needed to supply the wants of the future.

The editor of THE INDIA RUBBER WORLD desires me to tell my intelligent retail patrons what I know of life in the retail rubber department; what the experiences of my life in the trade may suggest in the way of hints available for the rising retailer.

The writer has bought and sold rubber goods, as have thousands of his fellows, but professes no superiority, fully realizing that it is the inexperienced braggart who claims to know. But in answer to the request above mentioned he will venture to suggest some of the essentials of at least one way to do business. The retailer must of necessity possess a knowledge of the products he handles, and of their use and abuse. He cannot purchase intelligently without a knowledge of their composition and construction, enabling him to detect defects, if any exist, at the outset. Again, in their distribution, even if he purchase wisely and is well served, a wail of dissatisfaction may come from the patron who through abuse of the product may make a bad showing. The retailer has reputation at stake, and how to secure justice and satisfy the patron is the enigma that knowledge and quick impromptu action must meet and answer. As business reputation is lost or won by these ever-recurring incidents, the retailer must fortify himself strongly to win, or suffer by defeat.

A knowledge of the different plants where rubber goods are manufactured, and of their various products, is helpful. One plant excels in producing most serviceable goods and another pays more attention to style or better-fitting lasts, each one producing something peculiarly its own, yet adapted to the varying classes of trades. The retailer is supposed to know the wants of the locality in which he lives, and as no one jobber is likely to carry the products of all of the manufacturers, the more familiar the retailer becomes with each the wiser will prove his selections. The

great gift of *what, where, and how-to buy* is the one thing most needful, which few possess. A retail dealer should possess a marked personality in himself of true manhood, by constantly being true to himself and to his neighbors in the broadest sense.

If a competitor has a great run on ladies' 1 M sandals at 16 cents per pair, will he or can he afford to imitate? "A man is known by the company he keeps." Shoddy goods invite patrons who seek shoddy (who smell rank). Dealers who invite such patronage will bear a reputation to match. As you aspire in life so prepare for the fray, letting Jones and Brown purchase such supplies as they need for themselves (akin to nature), resolving for yourself to aim high, which is the gateway of success. "Come to stay" might safely be your chosen motto, but even then every act must be painstaking, guarding closely the interest of every patron, producing the veritable article at the moment of demand, such promptness being the great coign of vantage through which the retailer may hope to excel.

It is stated truthfully that no class of goods is placed in the retailers' hands with equal luster with rubber goods; that no class is so badly abused by them for lack of care. Ordinarily the country dealer consigns them to a remote corner where the dust, from long neglect, is profuse, in boxes with lids askant. When anything in this line is called for, the contents of these boxes are dumped upon the floor in this unkempt place from time to time and are not always returned when a desired size is selected, but are left until a more convenient season for their replacement. Often the size wanted is not found, and other boxes in turn are overhauled in similar fashion. Possibly after all the customer is compelled to go without or be served with misfits, all for the lack of system. Again, for display, many country dealers keep a part of their stock always in sight,—goods which are quite as likely to be left in the glare of the sun in bright days as to be obscured in dust when wanted, which means damaged if not spoiled before worn.

Is there no remedy? The manufacturers of Coats's thread do not allow their products to thus come to the notice of the consumer. Could not the same system that they have adopted be applied to rubber goods? Cabinets by the thousand might be procured and be made ornamental, with drawers classified for various kinds and sizes, which would insure cleanliness, while the sizes wanted would be always in place and could be seen at a glance. Cabinets on wheels could be rolled into prominence on stormy days, with drawers open for display always convenient. There

\* Late president of the National Retail Shoe-Dealers' Association.



would then be no excuse for misfits, save gross neglect on the part of the merchant in ordering, and with an always tidy stock, with patrons well fitted, the demand for the rubber product would be increased. On the arrival of fresh goods, the retailer would open the cases and distribute the contents as readily as the postmaster opens the mail.

The Retail Shoe Dealers' National Association are urg-

ing standard measurements for lasts. Let some one urge ornamental cabinets, or the Rubber Department in stores.

With the allotted space filled, let us hope that a brighter corner may appear in the country store. Let us hope further that some wide-awake manufacturer will offer an "Ornamental Rubber Department" with a certain amount of goods, and that the one who offers first and best may win the reward of the enterprising and the just.

## THE EFFECT OF THE COMBINATIONS IN RUBBER.

*An Interview With Charles R. Flint.*

**F**OLLOWING the incorporation of the United States Rubber Co., with a capital of \$50,000,000, comes information of the organization of the United Mechanical Rubber Co., with a capital of \$15,000,000. As the first-named company was created to combine the leading manufactories of rubber boots and shoes, and to control the trade in their product, so the second is to consolidate some of the large works engaged in the manufacture of mechanical rubber goods. The United Mechanical Rubber Co. have not yet been formally incorporated, but the plans for the company have been fully perfected and only the details remain to be carried out.

The creator of both these great combinations is Charles R. Flint, who practically controls the crude-rubber trade of the world. Mr. Flint has kept in the background in the promotion of the schemes for the centralization of the rubber manufacturing interests, but his part in the business has been none the less important. He personally conceived the combinations, effected their capitalization, and conducted the negotiations with the manufacturers who sold or leased their plants to the new companies.

Until now Mr. Flint has steadily refused to discuss for publication the operations of the consolidated manufacturing companies. To a representative of THE INDIA RUBBER WORLD, however, he has imparted news and views of unusual interest to the trade.

"What is the relation of the United States to the rubber industry?" he was asked.

"Two-thirds of all the rubber consumed in the world," he replied, "is manufactured in the United States. The United States Rubber Co. are now producing rubber boots and shoes at the rate of 40,000,000 a year. The United States and the United Mechanical companies will turn out three-quarters of the manufactured product of this country."

"How rapid has been the development of the rubber industry?"

"The manufacture of rubber boots and shoes in 1860 amounted to \$795,000; in 1870 to \$8,000,000; in 1880 to \$16,000,000; in 1890 to \$23,000,000; in 1891 to \$26,000,000, and in 1892 it will be in round numbers \$30,000,000. I have not yet prepared the figures for the business in mechanical rubber goods. There has not been so rapid a development in the trade in mechanical goods as in boots and shoes, but the business will expand very fast from this time forward, owing to the increased facilities for manufacturing and the new uses to which rubber is being put."

"In what direction is the use of mechanical rubber likely to increase most?"

"Rubber will be used very extensively for the insulation of electric wires. It is the best non-conductor that has ever been discovered. It will be used largely before long for tires for carriage-wheels. In London now people wait for hansoms with rubber tires. It will be the same in New York and wherever conveyances with wheels are employed. It was Goodyear's idea, when he found out the method of vulcanizing rubber, that this substance would come into universal use for tires for carriages. The enormous extent to which it is utilized in pneumatic tires for bicycles indicates what the future use for rubber on wheels will be. Pneumatic tires will not be generally used on carriages, but instead solid rubber tires, for their greater durability."

"Why is rubber manufactured and used in the United States more extensively than in Europe?"

"It is owing to the disposition of the Americans to adopt new ideas, to our severe winters, and to the large purchasing power of the wage-earners, as well as on account of the American inventive genius in constructing machinery to turn out the goods. Where rubber is manufactured in other countries, the machinery employed is of American design. In Europe a large part of the people do not wear rubber shoes, whereas in this country they do, which explains why so much rubber is used here."

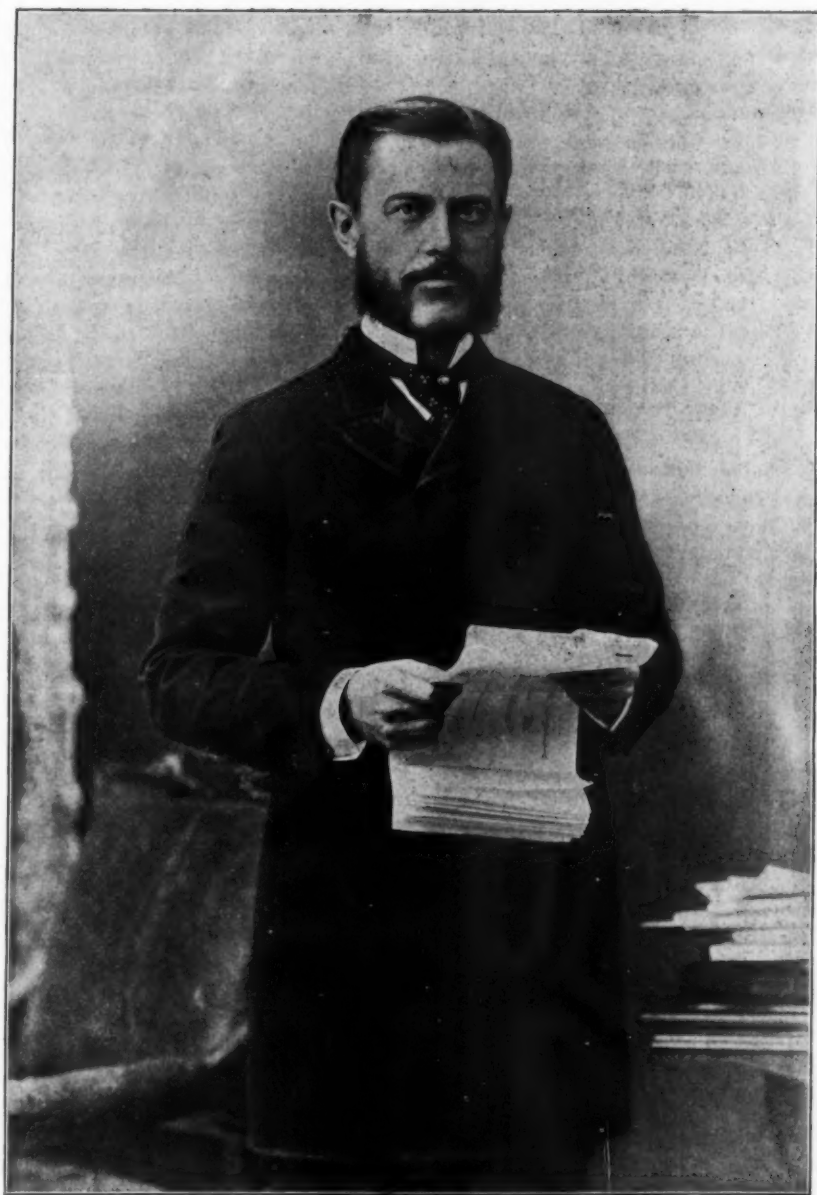
"Will the control of the crude-rubber trade and the combination of the manufactories result in increased prices for rubber goods?"

"On the contrary, when the superior quality is taken into account, the people will get their goods cheaper than they can be bought to-day. Isolated plants and high cost of manufacture, owing to the great number of organizations, have made it necessary heretofore to reduce the quality to meet the competition. The competition of the manufactories will result in great economies. The purpose is to increase the market by producing better goods for less money."

"Is there any danger of the exhaustion of the crude rubber supply?"

"No; the supply is unlimited. There is only one thing to be considered. The populations of the countries which supply crude rubber do not increase in anything like the same ratio as the populations of the countries which use manufactured rubber. Still this discrepancy will be made up by the use of reclaimed rubber,—that is, old rubber





*Chas R. Flint*

goods which can be devulcanized and made into mechanical goods. I have no fear but the supply of rubber can be maintained. Two-thirds of all the crude rubber we use comes from Brazil, but rubber is found in all tropical countries."

"Cannot a combination be effected in Brazil to corner the crude rubber market?"

"Not a successful one. Baron de Gondoriz formed a Brazilian company two or three years ago to corner crude rubber. We consolidated the consuming interests and defeated the corner."

"Is the control of the crude market now secured in New York?"

"Yes; the New York Commercial Co. are the principal factor in the crude-rubber trade."

"How did you come to embark in the rubber trade?"

"Being engaged in the South American exporting business, it was natural that I should drift into the importing of so staple a product as rubber. I have been in the rubber trade since 1878. Before that, for eight or nine years, I had been exporting merchandise to South America."

Mr. Flint, whose full name is Charles Ranlett Flint, has had a busy career. He was born in Thomaston, Maine, on January 24, 1850. His father was Benjamin Flint, a ship-builder, who removed his business to New York. The son was educated at the Brooklyn Polytechnic, from which he was graduated at the age of eighteen years. Three years later, in 1871, on attaining his majority, he established the firm of Gilchrist, Flint & Co., who engaged in a general commission business with the Spanish Americas.

In 1874 Mr. Flint made a trip to the East and West

coasts of South America, to familiarize himself with the commerce of those sections. He revisited South America in 1876 and on his return was appointed Consul-General of the republic of Chili at New York. He resigned this post when Chili declared war against Peru in 1879, because he was interested in the financial affairs of the Peruvian Government. He went to Brazil in 1884 to develop the crude-rubber trade of that country with the United States, and as a result he now stands as the most important figure in the world in the rubber business. On this trip he met the President of Nicaragua and was appointed Consul of that republic at New York.

Mr. Flint is estimated to be worth \$5,000,000. He is the head of the house of Flint & Co., which imports largely hides and wool from the Argentine Republic and Uruguay. He is a ship-owner, his family owning the largest fleet of vessels that fly the American flag. Mr. Flint is treasurer of the New York Commercial Co., Limited, and vice-president of the Export Lumber Co., Limited. He is a director in the National Bank of the Republic, the New York Produce Exchange, the State Trust Co., and the United States and Brazil Mail Steamship Co. He is a member of the Chamber of Commerce, and of the Coffee, Produce, and Maritime Exchanges, having been vice-president of the latter in 1880. He was also at one time president of the United States Electric-Lighting Co. He was recently appointed Consul-General at New York for Costa Rica. He was one of the representatives of the United States in the International American Conference at Washington, and has taken an important part in the negotiation of the reciprocity treaties between this country and the Latin-American States.

## RUBBER MANUFACTURES IN MASSACHUSETTS.

THE report on "The Annual Statistics of Manufactures" for Massachusetts, for 1891, is the sixth volume of the series, compiled by the Bureau of Statistics of Labor, under direction of Horace G. Wadlin, its chief. These annual volumes show a steady increase in value, as the results published represent from year to year a greater number of industrial establishments, and extend the opportunities for comparison between present and past conditions. There are some points, however, upon which these reports are not clear, as will be shown in this article.

Business returns for 1891 were made by 35 establishments manufacturing "Rubber and Elastic Goods," the output of which aggregated \$23,826,233 in value. It is impossible to state, however, whether this embraces the manufacture of rubber shoes, or whether that class of goods is embraced under the heading "Boots and Shoes," of which the output from the 829 establishments reporting, was \$102,565,305. It will be remembered that in the June issue of this journal was printed a letter from Chief Wadlin, showing that rubber shoes had been made by the concerns reporting in 1891 to the value of \$12,775,000, and he estimated that the product of the other shoe-making concerns would raise the total to \$14,052,500. That the heading

"Rubber and Elastic Goods" does not embrace all the manufactures of rubber reported for 1891 is shown by the appearance of a separate heading,— "Hose: Rubber, Linen, etc."

The value of the figures in this volume is not so much in the showing made for any particular year, but in the material which exists for comparisons, showing progress or the reverse in a given industry. While 31 "rubber and elastic-goods" concerns reported for 1891, only 26 establishments have reported yearly from 1885 to the present, fully enough to enable comparisons to be made. Further on some of the comparisons will be quoted.

### 1890 AND 1891 COMPARED.

Thirty firms are compared with reference to their business for 1890 and 1891, showing a considerable rate of increase for twelve months, as follows:

	1890.	1891.
Capital invested.....	\$13,404,303	\$15,143,966
Value of stock used.....	11,988,507	12,973,367
Value of goods made.....	22,798,934	23,655,976
Amount of wages paid.....	3,402,245	3,346,236
Number of employes.....	7,615	7,857
Average yearly earnings.....	\$446.78	\$425.89
Average number of days in operation.....	288.07	276.37

The items of increase are shown to be in capital invested,

value of stock used and of goods made, and in the total number of persons employed. The number of working days was smaller in 1891, however, on which account, without a reduction of the rate of wages, the average earnings were smaller, as also was the total amount paid for wages.

## 1885 AND 1890 COMPARED.

The number of firms reporting under the head of "Rubber and Elastic Goods," from 1885, enabling a comparison to be made for a period of five years, is 26. The showing made is as follows:

	1885.	1890.
Capital invested.....	\$10,500,129	\$13,370,907
Value of stock used.....	7,207,103	11,901,129
Value of goods made.....	11,734,756	22,275,018
Amount of wages paid.....	2,125,218	3,359,352
Number of employes.....	5,600	7,524
Average yearly earnings.....	\$379.50	\$446.48

Regarding the actual wages paid in the establishments reporting for 1890 and 1891, the following figures are given, showing an increase in the number of persons receiving the higher rate of wages:

WEEKLY WAGES.	1890.	1891.
Under \$5.....	950	881
\$5 but under \$6.....	538	557
\$6 but under \$7.....	894	792
\$7 but under \$8.....	1,224	1,295
\$8 but under \$9.....	1,121	1,112
\$9 but under \$10.....	1,140	1,381
\$10 but under \$12.....	1,079	1,115

## Recent Rubber Traffic of Germany.

IN a recent issue of *Kuhlow's Trade Review* (Berlin) appears the German official statistics of imports and exports of India-rubber and Gutta-percha for the first five months of this year, compared with the movement for the same period in 1891. No separate figures are furnished for the two commodities, as in the United States. First is given the amount of unmanufactured gum imported, by countries, showing a considerable increase this year over last. These tables, however, serve but a slight use toward indicating the country of origin of imports. But it appears that the direct importation from Brazil has increased. The table of imports follows, showing pounds:

FROM—	1891.	1892.
Africa.....	444,840	974,820+
Austria-Hungary.....	22,220	.....
Belgium.....	22,880	11,880—
Brazil.....	279,400	460,680+
British East Indies.....	332,420	323,620—
Denmark.....	9,680	.....
Dutch West Indies.....	.....	13,200+
France.....	115,060	162,800+
Great Britain.....	1,666,500	1,631,080—
Holland.....	361,900	143,660—
Italy.....	220	.....
Norway.....	1,980	.....
Portugal.....	.....	62,920+
Russia.....	97,900	87,560—
United States.....	47,300	13,860—
Other countries.....	468,600	.....
Total.....	3,870,900	3,886,080+
Excess in 1892.....	.....	33,396

\$12 but under \$15.....	886	1,014
\$15 but under \$20.....	625	769
\$20 and over.....	212	115
Totals.....	8,769	9,031

In this table has been given the exact number of persons employed in the thirty establishments; the first table given showed the average number of persons employed during each year.

## THE RUBBER-THREAD INDUSTRY.

The report contains these figures relative to the amount of rubber thread manufactured in the State in 1890 and in 1891; also, the amount of rubber thread used by manufacturers during the same periods:

	1890.	1891.
Rubber thread made, pounds.....	222,300	408,600
Value of same.....	\$273,348	\$693,410
Rubber thread used, pounds.....	328,500	330,900
Value of same.....	\$437,846	\$464,001

As for the conditions of manufacturing in general, the Massachusetts report shows an increase in capital in all industries, for the year, of 2.34 per cent.; an increase in the number of persons employed of 1.72 per cent.; an increase in the value of goods made of 1.33 per cent.; and an increase in average yearly earnings of .91 per cent. The average yearly earnings of employes in all branches has grown from \$366.66 in 1885, to \$441.90 in 1891. The rate of increase in the rubber industry is shown in the second table above.

It is proper to say that the totals in this table differ from those given in *Kuhlow's*, but it is not possible in THE INDIA RUBBER WORLD office to obtain any other totals from the details given by countries.

The exports of unmanufactured gum are not given in detail, as they are spoken of as "insignificant" when compared with the imports. In the aggregate the exports for five months in 1892 were 852,280 pounds, and during the same period in 1891, the total was 897,600 pounds.

The exports of rubber products, as classified in the official returns, are thus compared for the two periods of five months—from January to May, inclusive—in 1891 and 1892, the figures again referring to pounds:

CLASSES OF GOODS.	1891.	1892.
Hardened Caoutchouc in mass. ....	13,200	33,660+
Caoutchouc Threads, Tubes, etc. ....	93,720	112,220+
Coarse Goods of Soft Caoutchouc. ....	897,600	905,300+
Finished Hard-Gum Goods.....	417,340	408,980—
Fine Goods of Soft Caoutchouc.....	480,260	914,320+
Toys of Soft Caoutchouc.....	878,020	341,660—
Textiles Woven or Covered with Caoutchouc.....	272,800	311,300+
Elastic Hosiery.....	9,240	12,980+
Compressed Cloth of Caoutchouc for Manufacturing.....	.....	.....
Waterproofed Hempen Tissues.....	66,220	69,080+
Unclassified Wares.....	440	220—
Total.....	3,128,840	3,109,720—

[The signs + and — indicate Increase and Decrease.]

Without going into details, the imports under the same headings show the following aggregates for the two periods under



comparison, from which it will be seen that the imports have declined by a very considerable percentage:

	Pounds.
First five months of 1891.....	955,480
First five months of 1892.....	795,740
Decrease in imports .....	159,740

Taking the business of May alone, the imports of crude rubber this year amounted to 1,139,160 pounds, as against 663,960 pounds in May, 1891. It may be of interest to state that in the same months the United States imported 2,584,439 and 2,246,041 pounds respectively. Great Britain imported 2,482,400 pounds of India-rubber and Gutta-percha in May, 1892, and 2,815,500 pounds in May, 1891.

### A News Syndicate Ended by Death.

GEORGE A. LEACH, an old newspaper man, who died in New York on August 10, had in contemplation a news syndicate for bringing rubber news daily from Pará, Liverpool, London, and Hamburg, for the use of importers and manufacturers in this country. Mr. Leach had great experience in this line with other interests, his long residence in London giving him unexceptional faculties for intercourse with commercial men, but in rubber he met with difficulties not readily overcome. Although it could not be said that he ever lost sight of the enterprise, he found himself forced to await opportunities and a ripper development of the necessities of such service. If he had lived another year his enterprise and force of character doubtless would have impelled him to undertake the work. Mr. Leach was sixty years of age and had been an international news-gatherer for nearly twenty-five years.

### The Countermanding of Orders.

THE Colchester Rubber Co. write to the *Boot and Shoe Recorder* in reference to the countermanding of orders:

"Our remedy for that evil is to accept no orders that are not signed by the purchaser. This with our acceptance forms a legal contract, which under our rule we always enforce through the courts. Our position is this: that a dealer who is not man enough to stand by an order given or taken in good faith is not a desirable customer (excepting under some special circumstances, of course), and we do not care for his trade. Hence we always follow such rejection of goods with a suit at law, and we would like the retail buyers to fully understand this."

### Rubber Shoes as a Luxury.

AS we have heretofore intimated, rubbers are in one sense a luxury. It is true their utility and convenience makes them quite a necessary article of footwear for cold weather, but if forced to do so people can manage to get along without rubbers. In European countries, for example, there is only a limited demand for rubbers. They are worn to some extent by the well-to-do classes, but the common laborers and mechanics, forming the mass of the population, find rubbers a luxury beyond their reach. The working classes here, on the contrary, are able to buy rubbers, and they are the consumers for the bulk of the product of our mills. The relative importance of the demand due to the different conditions is proved by the fact that we consume nearly one-half of the entire world's supply of raw rubber. Climatic conditions alone would not account for this difference in use of rubber, because

our climate is not essentially different from that of Europe. In rubbers, as in leather goods, the higher-priced specialties make up but a small portion of the total value of the productions. The greater portion or from two-thirds to three-quarters of the total is made up of the medium and common grades that go to supply the wants of the ordinary wage-earners on whose condition the prosperity of the country depends.—*Boot and Shoe Recorder*.

### The Pulley is Covered with Rubber.

IN many places a belt made of braided or woven steel wire has been introduced, and is said to be regarded favorably. It is found that in this belting there is an unyielding nature which has to be overcome and which, it was once thought, would render it unfit for this work. Indeed on uncovered pulleys rubber belting is far superior. When, however, a pulley is covered with rubber, the wire belting gives general satisfaction, although the pulley is apt to soon wear out.

### A Monster Squirt-Gun.

PROFESSOR GARNER, who is making an expedition to "monkey land" to study the language of apes and monkeys in their native haunts, carries with him a curious gun. It is practically a rubber canteen which he wears under his arm and to which is attached a hose two feet long, with a metallic nozzle. The canteen is charged with concentrated ammonia, and when pressed sends out a dose of such power that the fiercest animal would scarcely care to face it. For hand fighting an arm of this kind would certainly make it very interesting for the enemy, and in the interest of our rubber-manufacturers, we would recommend that it be brought to the attention of the Government.

### The Composition of Old Rubber.

AN analysis has recently been made by Mr. H. J. Phillips, F.I.C., of a nine-year-old India-rubber mat, which he found to have the following composition: Moisture, 0.50; silica, 1.38; oxid of iron and alumina, 0.70; zinc oxid, 3.51; sulphur, 3.97; barium sulphate, 3.74; chalk, 31.94; caoutchouc, 54.26. The mat was rather brittle, but considering it had done unceasing and hard service for so many years it was virtually very little the worse for wear.—*Chemical Trade Journal*.



NANCY HANKS'S PNEUMATIC-TIRED SULKY.  
[Wheels, 20 inches; ball bearings; "hosepipe" inflated tires.]

## CHEMICAL ANALYSES OF THE GUTTA-PERCHA USED AS A DIELECTRIC IN ELECTRIC CABLES.

By J. A. Montpellier.\*

THE raw and refined Gutta-perchas found in commerce are very different in quality, and often show considerable differences of composition. In an article published in 1891 in the "Annales Télégraphiques," † M. Lagarde, engineer of posts and telegraphs, made known the results of investigations which he had carried on with a view to determining the influence which the composition of commercial Gutta-perchas can have upon their insulating quality when used as a dielectric in the manufacture of cables.

The chemical analyses to which I have submitted the numerous samples experimented upon for the purpose of determining their immediate composition have always been accompanied by electrical tests on the insulated cables furnishing the samples examined. Further, to make comparison of the results possible, Gutta-perchas of various qualities were used as dielectric of the cores of identical cables always experimented upon under the same conditions.

These chemical and electrical tests, carried on for several years, have always given analogous results, showing beyond doubt that the purer a Gutta-percha is, the less is its insulation, though having a sufficient insulating power.

As M. Lagarde so truly says in the article referred to above, there results from this fact the practical conclusion that in buying cables insulated by Gutta-percha it is prudent to fix a maximum as well as a minimum for the insulating resistance of the core of the cable per kilometer—limits which naturally must vary with each type of cable.

The influence of the quantity of water, which is always present in manufactured Gutta-perchas, has likewise been studied from the standpoint of the variations in the insulating power which it may cause. It has been found that the effect of the water upon newly-made cables is at first to lower their insulation, but that this diminution is only temporary, the Gutta-percha oxidizing—that is, "resinifying"—with a rapidity, when exposed to the air, proportional to the amount of water.

As is shown by the foregoing, the chemical analysis of Gutta-perchas may furnish indications of great usefulness in the manufacture of cables. Consequently it seemed to us that an explanation of the method of analysis which we devised in 1886 and have used constantly ever since might be interesting to electricians; it is this that has induced us to publish it.

We will not enumerate here the physical properties of Gutta-percha, which are well known, but we will say a few

words of the immediate principles which enter into its composition.

The first chemical investigations of Gutta-percha were made by Payen, who, in a memoir presented to the Academy of Sciences in 1851, announced its immediate composition and designated by the words *gutta*, *fluavil*, and *albin* the three immediate principles of which it is formed.

*Gutta* combines the useful properties of Gutta-percha, and, when the product is of good quality, is the most abundant of the three immediate principles. It enters into the composition of the natural product purified in a ratio varying from 40 to 85 per cent. according to the quality. Its percentage composition, corresponding to its formula  $C^{20}H^{32}$ , is as follows:

Carbon.....	88.24
Hydrogen.....	11.76
	100.00

It is soluble in chloroform and sulphid of carbon, insoluble in alcohol and ether. It is white at the ordinary temperature and takes a yellowish tint when heated at  $113^{\circ}$ .

*Fluavil* is an amorphous resin, yellow, diaphanous, solid, hard, and brittle. It is the first product of the oxidation of *gutta*. Its chemical formula  $C^{20}H^{32}O$  corresponds to the following percentage composition:

Carbon.....	83.33
Hydrogen.....	11.11
Oxygen.....	5.56
	100.00

It is soluble cold in anhydrous alcohol and ether, sulphid of carbon, and chloroform.

*Albin* is a crystalized white resin. This is the second product of the oxidation of *gutta*. It presents the following percentage composition:

Carbon.....	78.94
Hydrogen.....	10.53
Oxygen.....	10.53
	100.00

corresponding to the formula  $C^{20}H^{32}O^2$ . It is soluble in chloroform and sulphid of carbon. Absolute alcohol dissolves it in very small quantity cold; at the boiling point it is very soluble.

It is known that air and light act on Gutta-percha, causing it to lose, more or less rapidly, the qualities which fit it for the various uses to which it has been put. This alteration is the result of an oxidation which changes the pure *gutta* into *fluavil* and *albin*.

It is important then to determine the amount of pure *gutta* contained in a commercial Gutta-percha, since it is this substance which gives it its quality and consequently

\*Translated for THE INDIA RUBBER WORLD, by Benjamin R. Tucker. From *L'Electricien*, Paris. Vol. IV., pp. 89-94. August 6, 1892.

† "Annales Télégraphiques," Vol. XVIII., p. 5. January-February, 1891.

its value. The less a Gutta-percha is oxidized,—in other words, "resinified,"—the longer will it last; and this is a capital point in certain applications,—for instance, the manufacture of electric cables.

Besides the action of air and light, there is another cause of oxidation which intervenes to effect the alteration of Gutta-percha. This is the amount of water which the purified product always contains in consequence of the cleansing operations which the raw product has undergone. The determination of the amount of water, there-

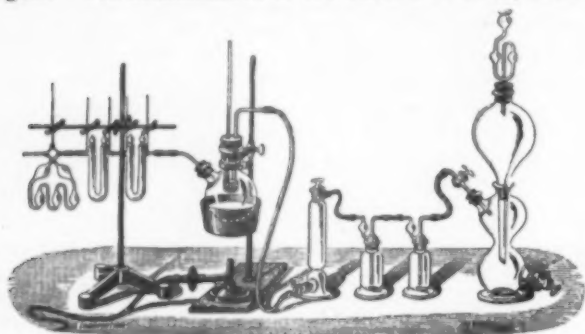


FIG. 1.—APPARATUS FOR THE DETERMINATION OF THE AMOUNT OF WATER IN GUTTA-PERCHA.

fore, is important; this result has a certain value in the estimate which the chemist may form after an analysis.

Finally, it is likewise useful to be able to determine the amount of foreign matters, whether these are due to an imperfect cleansing of the raw Gutta-percha or have been added fraudulently.

It follows from these considerations that, to effect a complete analysis, we must determine: (1) The amount of water; (2) the amount of impurities or foreign matters; (3) the amount of ash; (4) the amount of pure gutta; and (5) the amount of resins (albin and fluavil).

**I. DETERMINATION OF THE AMOUNT OF WATER.**—The determination of the amount of water is effected by heating a known weight of the sample under examination to a temperature ranging from  $212^{\circ}$  to  $230^{\circ}$ . The loss of weight gives the amount of water. This is the process usually followed in chemical analyses; but, in the special case before us, account must be taken of the fact that Gutta-percha heated in contact with the air oxidizes rapidly, causing an increase of weight possibly exceeding that of the water evaporated. This difficulty is avoided by heating the Gutta-percha in a slow current of gas,—carbonic acid or nitrogen.

Figure 1 represents the apparatus which I have arranged for this purpose. It consists of a special retort with a large opening, serving as a vapor-bath and having a tubulure at the side. It is closed by a large cork pierced with two holes; through one passes the thermometer, through the other a tube for the introduction of carbonic acid. A crucible of platinum or porcelain, suspended within the retort, contains the sample to be dried. The water which evaporates, borne by the current of dry carbonic acid, passes out through a tube inserted in the side tubulure of the retort and goes into U tubes containing sulphuric pumice, which retain it. A Liebig tube with five bulbs,

containing pure sulphuric acid, connects with the U tubes, farther on, and prevents the entrance of moist air after the apparatus cools; moreover, it makes it possible to regulate the speed of the current of carbonic acid. The retort is plunged into an oil-bath heated by a Bunsen burner.

The carbonic acid, obtained by the action of chlorohydric acid on pieces of white marble, is produced in a Kipp apparatus followed by wash flasks containing, the first a solution of bicarbonate of potassium intended to stop the passage of any chlorohydric acid, and the second sulphuric acid at  $151^{\circ}$  to dry the gas. For further precaution, a dessicator to dry the gas, filled with sulphuric pumice, is placed between the second wash flask and the retort. To completely dry the sample of Gutta-percha (one gram is generally taken) the apparatus must be kept in operation for six or seven hours.

**II. DETERMINATION OF THE AMOUNT OF IMPURITIES.**—This determination is very easily effected by the aid of the exhaust apparatus of M. F. Jean represented in Figure 2. From half a gram to a gram of the sample to be examined is weighed, divided into small fragments, and put in a weighed filter, which is itself placed in a platinum cone.

This cone is then put in the extension of the apparatus; this extension communicates by two tubes with the retort containing pure chloroform. A condenser, in which a current of cold water constantly circulates in order to con-



FIG. 2.—APPARATUS FOR THE DETERMINATION OF THE AMOUNT OF IMPURITIES IN GUTTA-PERCHA.

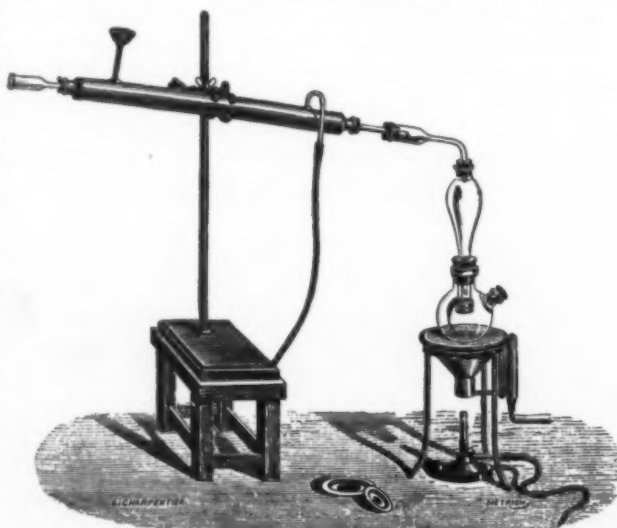


FIG. 3.—APPARATUS FOR THE DETERMINATION OF THE AMOUNT OF RESINS IN GUTTA-PERCHA.



dense the chloroform vapor, is placed at the upper part of the extension.

The retort rests on a sand-bath very gently heated by a Bunsen burner. Under the influence of the slight heat the chloroform evaporates, passes through one of the tubes, and drops on the filter containing the Gutta-percha, which it gradually dissolves. The solution, passing through the filter, then drips into the retort through the second tube.

All the impurities remaining in the filter, it is sufficient to dry and weigh the filter to get the weight of the foreign matters. The drying should be done in the apparatus used in determining the amount of water.

III. DETERMINATION OF THE AMOUNT OF ASH.—The determination of the amount of ash is effected by burning a known weight of Gutta-percha in a capsule of platinum or porcelain. Gutta-percha, like all organic substances, always contains a very small quantity of mineral matters, never exceeding  $\frac{1}{2}$  per cent.

IV. DETERMINATION OF THE AMOUNT OF PURE GUTTA AND OF RESINS.—Fluavil and albin being soluble in absolute alcohol at the boiling point, while pure gutta is insoluble in this reagent, it needs only to utilize this property to effect the separation. This operation is very readily performed in the apparatus represented in Figure 3.

The sample to be examined, cut into small bits and weighed (half a gram to a gram), is placed in a small platinum basket pierced with little holes and suspended in a retort containing absolute alcohol. The water-bath or sand-bath is heated, and the alcohol vapor condenses in the Liebig condenser, which is so mounted that the alcohol then flows back into the retort.



FIG. 4.—A MODIFICATION OF THE APPARATUS SHOWN IN FIG. 3.

During the first part of the operation the basket should be half plunged in the boiling alcohol. After five or six hours of boiling, it should be raised above the liquid and the boiling continued five or six hours more. The object of this second operation is to thoroughly wash the gutta and remove the last traces of resin.

This apparatus, however, which I have used for several years, involves a difficulty; it allows the passage through the holes in the basket of little bits of Gutta-percha during the agitation of the boiling liquid. To overcome this difficulty I have substituted for the basket a cone of platinum sponge containing a weighed filter in which the sample is placed, and for the ordinary extension a special tube shown in Figure 4. During the first part of the operation the cone is so suspended as to dip half-way into the alcohol; during the second part it is suspended in the tube, as shown in the figure.

The operation over, the resins are completely dissolved and the pure gutta as well as the impurities (already determined in another operation) remain on the filter. It remains but to dry the filter in the apparatus used in determining the amount of water, and then weigh it.

The loss of weight suffered by the Gutta-percha corresponds to the amount of resins (albin and fluavil) dissolved by the alcohol, increased by the weight of the water which a previous experiment has determined. Subtracting the weight of the latter, the weight of the combined fluavil and albin remains. The separation of the albin and fluavil is attended by very great difficulties and has no commercial interest.

The chemical analyses made simultaneously with electrical tests (measure of insulating resistance and capacity) permit an exact estimate of the value of a Gutta-percha from the standpoint of its use as a dielectric.

Numerous experiments have led M. Lagarde to consider Gutta-perchas having at most  $\frac{1}{2}$  per cent. of mineral matters and 5 per cent. of water as tolerably good when containing at least 50 per cent. of pure gutta; as good when containing at least 60 per cent.; and as very good when containing 65 per cent. or more.

## A RUBBER SUBSTITUTE FROM COTTON-SEED OIL.

A NEW substitute for India-rubber made from cotton-seed oil has been submitted to some leading rubber-manufacturers for experiments, with such results that the discoverer is arranging for its production on a large scale. The new substance is due to a process which grew out of investigations by Mr. John G. Carter, an Eastern man who went, two years ago, to Savannah, Ga., for the sake of his health. Being an artist by profession, he was accustomed to handling oils and paints, and being brought into contact, by his change of residence, with the manufacture of cotton-seed oil, he turned his attention to testing the fitness of the latter for varnish. His first object was to eliminate the properties which prevent this oil from drying, and thereby render it unsuitable for varnish. The result of his experiments was to remove all

the "grease," as he calls it, without adding any foreign material to the mass, after which an elastic solid remained. Thinking that something had been gained in the direction of making a varnish, he showed his work to a friend who happened to be a rubber manufacturer, and who at once saw a possibility of utilizing the new product as a substitute for India-rubber. Samples have since been submitted to other manufacturers, the results of whose tests, it is claimed, have been favorable.

The Savannah News reports the purchase by Mr. Carter of a tract of 97½ acres of land, upon which an experimental plant to cost \$15,000 is being erected, the capital to be invested in the business coming from Boston. In a letter to THE INDIA RUBBER WORLD Mr. Carter says he believes that the new manufacture has progressed already beyond

an experimental stage, and that the larger plant embraced in his plans may be regarded as a certainty. By the time this journal is printed he expects to have about five tons of the new substitute on hand, and samples will be sent to any responsible parties desiring them. A sample of which 50 per cent. is pure rubber, sent to THE INDIA RUBBER WORLD office, was made about March 1. Mr. Carter writes that it has grown better, if there has been any change in it, instead of becoming hard, or brittle, or losing its life. He adds that its manufacture in large quantities is only a matter of erecting sufficient plant, and that it can be sold at a low price at a profit. The process involved of course remains a secret.

The cotton-seed oil industry has already opened important but long-unsuspected avenues of wealth to the Southern planters. Instead of being a waste product and a nuisance, which land-owners were willing to pay to have removed from their premises, it has been discovered that cotton-seed contains materials second in value only to the lint which has been removed from it. Cotton-seed oil has met with a large demand in the manufacture of lard-oil and butter substitutes in America; of olive-oil in Southern Europe; of soap, in many countries, and as an article of food, in unadulterated form, in some countries. What remains of the cotton-seed has been utilized largely, and with profit, in the feeding of cattle, especially in Texas, and in making fertilizers, throughout the South. If it should be demonstrated that cotton-seed will also afford a

rubber substitute, the profits of the cotton-planter will be again increased, for there is no demand more widespread, and none more likely to be permanent, than that for a good substitute for rubber.

The Southern newspapers which have mentioned Mr. Carter's discovery appear to regard the elastic substance he has produced as something that can take the place of India-rubber entirely. This is not true, however, of any rubber substitute yet discovered. Indeed, such an article would be as profitable to the inventor as a new kind of gas which could be produced at a tenth of the present cost of that product. There are already many so-called "rubber-substitutes" in the market, the best of which, coming from France and Germany, have a base of linseed oil or rape-oil. They are used for mixing with India-rubber in certain lines of manufacture, the goods produced being equally as serviceable as if rubber alone were used.

"There is no more profitable field open to invention than awaits the man who will discover a thoroughly good rubber substitute," said a manufacturer to THE INDIA RUBBER WORLD. "Mr. Carter may have found an unusually good thing. There is no reason, perhaps, why cotton-seed oil may not afford a good base for a rubber substitute, as well as the oils now used for that purpose. It may even be better than any other. By merely looking at this sample, no man could correctly estimate its value for mixing with rubber. There must be tests by heat and by exposure to wear."

## THE EVOLUTION OF THE RUBBER SOLE.—II.\*

*By E. D. Deming.*

THE annals of the nineteenth century reveal an interesting ambition of genius directed in the line of India-rubber as applied to the great boot industry of America. The lover of historic lore may find, if he will take time for diligent research, the field littered with the remnants of the studious inventor's toil. The rubber shoe and the rubber sole have been truly an evolution. It is evolution in its truest sense. Darwin's "Descent of Man" is but a supposition or a theory, while the progress of the use of India-rubber in the arts and sciences is a literal fact, with a beginning dating backward but a century, for the first known patent on rubber in a mechanical sense was granted to Samuel Peal, in England, in 1791, for a waterproof coating upon garments. And this invention was by no means a flattering success, the true solution of fabricated garments being left, as stated in the previous article, to the application by Macintosh.

To an American, we believe, is the credit to be given of first, in any way, conceiving of the application of caoutchouc to the boot industry. This application did not extend very far or very successfully into the boot-and-shoe manufacturing industry. Mr. S. N. Breed, a resident of Philadelphia, in 1832, recognized the cohesive qualities of caoutchouc, and brought out an application of these

qualities for attaching the soles to boots and shoes. His idea was to bring out a method which should be of benefit to the shoe craft, enabling it to produce a shoe more quickly than by sewing or pegging, as the peg-making or peg-driving machines had not at that time made their appearance. While Mr. Breed's process was adopted to some extent, there were obstacles in the way of its progress—a dim uncertainty about its practical usefulness, and the idea was superseded by later inventions, and with the advent of vulcanized rubber was entirely forgotten. At about this time of which I am writing, Mr. W. Webster, and a year later, Mr. N. Ruggles, secured patents for attaching soles to "gum-elastic" boots and shoes.

After Goodyear's vulcanizing process had been given to the world, and improved soles of rubber had been introduced, came forward the inventors with machinery for cutting and shaping the soles of rubber automatically. Christopher Meyer devoted his life work to the rubber interests, and many of his encouraged works of genius are remembrances of his industry. It was to Mr. Meyer and to Elias C. Hyatt that a patent was granted for a machine to shape the sole, shank and heel in a solid piece. An illustration of the working principles of this machine is shown in Figure 1, on the following page.

This device consisted of two rolls, marked 1 and 2 in

\* The first article in this series appeared in the issue of this journal for August.

the engraving. The external surface of the sole was formed by the lower roll of the device, *A* representing the sole, *B*, the smooth portion, for the shank, and *C* for the heel, thus forming soling of India-rubber with shanks, foreparts and heels in one solid piece and with appropriate differences of thickness. Afterwards the soles might be cut to widths desired from this continuous sole shaping arrangement.

In 1857, Mr. Stephen Thurston of Newark, N. J., brought out a machine for cutting India-rubber soles. The sheet of rubber was placed upon a feeding or carrying cylinder while another cylinder carrying a cutting device revolved

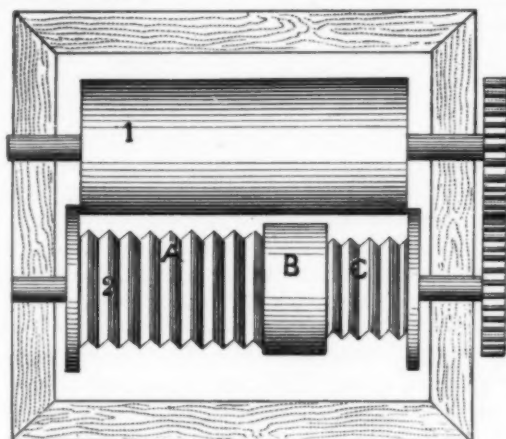


FIGURE 1.

with a cutting-knife, working with cams to give the sole the desired shape. When a revolution had been made the cams dropped to their original position ready to cut out the next sole, and so on.

It was about the year 1861 that the forerunner of the tennis-shoe came upon the market. It was not called a tennis-shoe, neither would it bear a striking resemblance to the modern, high-art tennis goods. But it had something of the principle of the tennis-shoe about it, although I admit that the accompanying drawing bears little resemblance to the stylish tennis-shoe of to-day. It might be termed, perhaps, the uncultivated and unsocial father of the modern tennis-shoe—the origin from which it sprang. [See Figure 2.]

It may have the appearance of a rather unstylish sort of overshoe or rubber. But such it was not. It was a shoe

for wearing next to the foot, having a sole of rubber, with an inner-sole so arranged that it would admit, it was claimed, of evaporation of the perspiration. The upper of the shoe illustrated was of cloth or felt, coated with rubber near the sole to keep the foot dry in rainy weather.

Not long after the above-described shoe was ready for the market, Mr. Louis Bauhœfer of Philadelphia brought out a



FIGURE 2.

sole combined with "cork and gum." It was intended for the soles of overshoes, but the inventor was ambitious to see his offspring cover a wider field, and in his "prospectus," or a circular, he alluded to its possibilities. "This sole," wrote the inventor, "may be used to advantage on shoes for field sports and running, the combination of gum and cork assuring them a firm hold, avoid-

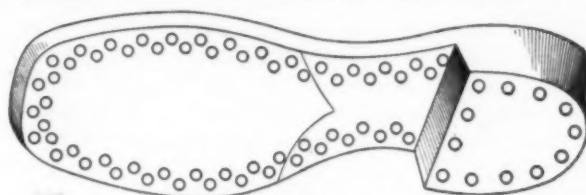


FIGURE 3.

ing much danger from slipping, and being lighter than leather of equal thickness." I am not aware that Mr. Bauhœfer's invention ever fully realized his expectations.

In my previous article I alluded to the vulcanized rubber sole, brought out by Mr. C. McBurney of Roxbury, Mass. This sole was provided with holes for pegs or nails as shown in Figure 3. These soles were quite generally

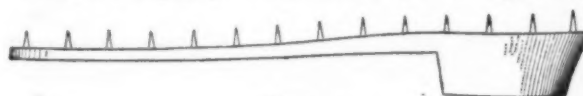


FIGURE 4.

used in the early history of rubber-boot manufacturing in Roxbury, and in 1863 the patents were extended.

In Figure 4 is shown an outline sole as patented by Theodore C. Weeks of Boston, in 1863, having the tacks imbedded in the sole and vulcanized therein. This sole was also alluded to in the previous article.

[TO BE CONTINUED.]

## RUBBER GOODS IN THE DEPARTMENT STORES.

**R**UBBER goods do not find their way to the consumer through the rubber store alone. We all know of the druggist with his stock of fancy articles, the shoe dealer with rubbers, the hardwareman with rubber-hose, the clothing-man with mackintoshes, and so on, but what about the department store with its ten-cent, fifteen-cent, twenty-cent, and fifty-cent counters? Go into the metropolitan store which furnishes the country dealer with supplies of every sort, and look at the overflowing shelves, the narrow alleys whose boundaries are

formed head high and higher of goods, and look for rubber articles. One might as well look for falling leaves,—he sees everything, and must look twice to see anything in particular.

"Have you any goods in rubber?" one asks.

"Yes, we carry staple articles such as can be sold for multiple sums, for five, ten, and fifteen cents, and so on."

One is disposed to allow the impolite question to escape him: "Are they good?"

"They are nothing else," responds the dealer; "reputable



manufacturers supply us, and we do *not* take job lots. Our system is to buy in large quantities,—much larger than it is necessary to explain,—and we pay for them *at once*. Then we turn them over quickly. There are hundreds of department stores in the country. Pennsylvania is full of them, and in each one of them the goods are well displayed and placarded with the price. It is a funny attribute of the old-time country merchant—and of many in the city, for that matter—that he does not care to publicly announce his prices. He seems to be ashamed of them, or else he has done it once or twice in a gingerly sort of way and some jealous rival has ‘cut’ him. Now it is human nature, when a man, woman, or child goes into a store, to look around, and all like to know what this or that costs, but if they ask they do it with the apology timidly spoken that they do not wish to buy, and so on. But placard the price, and then you have silently told your story, and a step has been taken to create a want which will be concluded then or later. So our department stores turn over goods very quickly, the stock does not get ‘dead,’ and we are knocking at the door of the manufacturer continually, and with the cash in our hands. Now when we get to the manufacturer he very likely has just sent on a small lot of—well, we will say rubber combs, or whistling balloons—to Slowpay & Co., who in turn will put them in their window and endeavor to get three unreasonable profits out of them. We look them over and make up our mind that they will be a good ‘leader,’ and ask prices. How much for the whole lot, *cash*? We get that lot, and we do not pay more than a living profit to the maker, and the goods are hustled out

into the country, so quickly that the small profit obtained in each step is really a handsome one in the aggregate.”

“What can you handle for so small a sum? Five cents is ridiculous!”

And then the rubber schedule, one of two or three hundred articles, is discussed. Medicine-droppers, medicine-cups and stoppers, teething-rings, nipples, nursing-bottle fittings, the bottle itself at ten cents, atomizers at 50 cents, hot-water bottles at \$1, fountain syringes, \$1.10.

“Of combs,” says the dealer, “we carry a very large line. A fair sample is an eight-inch special for five cents. I give nothing but retail prices. A fancy pebbled eight-inch comb sells at ten cents; some ‘unbreakables’ at 25 cents; fine combs 5, 10, and 25 cents; rubber pocket-combs ditto; all sorts of round combs, indestructible and ribbon-round, the best not over a ‘quarter’ in price. We make up an assortment of combs, put seven dozen in a basket, and sell the whole for \$2.50, but only four dozen of them are rubber. Erasers go for 5 and 10 cents; rubber bands of all sizes at various prices, and no better than you can do elsewhere; penny balloons which will make a noise, dime rattles and balls, foot-balls at 50 cents, or the best at a dollar. We sell a good lot of harness trimmings, and have hard rubber imitated pretty well in harnesses. Naturally rubber is a small item with us, and we select only such articles as are quick sellers; we cannot afford to carry dead stock, and never get caught twice on the same thing.”

And down three flights of stairs, past a score of glass-partitioned offices, by a gauntlet of twenty salesmen, we picked our way by packing-boxes galore, to the street.

## WAXES, GUMS, AND RESINS USED IN INSULATING WIRES.—I.

*By Frederic A. C. Perrine, D. Sc.*

**B**ESIDES those covered with Gutta-percha and vulcanized India-rubber there is in use in this country a large class of wires which are, as it is called, “weatherproofed” by the means of certain waxes; insulations discredited by the users and manufacturers of the first-named materials, but which have played a very important part in the extensive introduction of the electric light, especially in the smaller towns and country districts where the high cost of a rubber or similar wire would have rendered the electric light plants unprofitable investments.

This wire is called “weather-proof” to describe its properties and to take it out of a class with others which are capable of retaining their insulating properties when immersed in water, and even kept there for an indefinite length of time,—a test which would be fatal to “weather-proof,” although this covering gives sufficient protection against the atmospheric influences of rain and frost to enable it to be safely handled or to guard against disastrous consequences when accidentally in contact with either a person or some other wire. This insulation is a braiding of cotton or other yarn saturated in some compound which is not subject to oxidation or other changes when exposed to the influences of the elements. The basis of these compounds is natural asphaltum rendered liquid

by heat and the admixture of other materials of a lighter nature.

The first attempt to produce a wire of this character was the one now called “annunciator,” and which consisted simply of a cotton winding soaked in white paraffin afterwards polished by rapidly revolving steel plates pressing against the covering, cutting away all superfluous wax, and rubbing down into the crevices between the yarn that which remains. Though this wire is still used for bell-circuits in our houses, where very low potentials are sufficient, it has been found that, in spite of its oleaginous character, the paraffin is capable not only of hygroscopically condensing moisture upon its surface, but also of actually absorbing and retaining water in the very minute pores of the wax itself, and in consequence it cannot be safely employed where the potentials rise to those necessary for the electric light or even for low electro-motive forces in out-of-door circuits.

The next advance was to increase the yarn to a braid which, by its more open character, allows the wax to be retained as a more compact body and to improve the character of the wax itself by the addition to the paraffin of ceresine and rosin, thus producing what is now called “office wire” from its use in the telegraph offices, where

it is almost exclusively employed for connecting the instruments, and to which use it is almost entirely relegated now that the true "weather-proof" wire has been produced.

In this latter the braiding, while often very heavy, nevertheless simply performs the function of a carrier of the compound, upon which reliance is put for all the insulating properties, since it has been found that, no matter how thoroughly the yarn is apparently saturated, it is still capable of further absorbing moisture and of carrying it by capillary attraction to the surface of the conductor and forming a path either for the escape of the electricity or for it to give shocks to a person touching the wire, which are obviously the more severe in proportion to the preponderance of the yarn in the total insulation. If it would be possible to retain the insulating compounds in place without the presence of the yarn, a far better wire could be manufactured, but all of the materials except vulcanized rubber, which are flexible enough for use as the covering of a wire, have been found to be very easily rendered mobile by even the heat of the sun and are accordingly applied in conjunction with a braided yarn which, also keeps them in place after the wire is in use.

As we have said above, asphaltum and other natural waxes are the bases of most of these compounds, and although these waxes are all of the character of paraffins, they differ between themselves and from the artificial residuum and from the white artificial paraffin in many important particulars.

The most commonly used asphaltum is that known as "Trinidad," which is procured from the island of that name off the north coast of South America; this wax partakes most of any of the character of artificial paraffin, and except for its higher melting point and slightly more permanent character is hardly preferable. Its exceedingly low cost, however, tempts a great many manufacturers to its use, as well as the foreign sellers of ozocerite to its use as an adulteration of their product, to which it gives a harder character, which property is again altered by a further adulteration with Burgundy pitch, fortunately always betraying itself by its strong, characteristic odor.

This combination of Trinidad asphaltum, ozocerite, and Burgundy pitch would, on account of its great flexibility and oleaginous character prove a very satisfactory insulating material were it not for the unfortunate characteristic of the pitch, possessed in common with rosin, of rendering all compounds of which it forms a part very mobile under the influence of the least application of heat, while the vastly different densities of the ozocerite and the asphaltum allow a filtering action to be effected by the yarn, which absorbs into its pores the lighter ozocerite, retaining upon its surface the heavier asphaltum, thus producing a wire entirely too liable to the absorption of water.

The point here spoken of—the possible separation from the remainder of the compound—is the most disadvantageous characteristic of ozocerite, a natural paraffin found in Galicia and in the mountains of Utah. The product of the American mines is the more valuable one, not only on account of its containing less free petroleum, but from the

very important fact that the American manufacturers do not as a rule add adulterations to their product, which, while they may or may not prove injurious to the insulation, are at any rate a very disturbing element in one's calculations and render different batches of the same mixture liable to great variation in result.

Ceresin is a refined product of this same ozocerite, of a butter-yellow color, containing almost no free petroleum, but on account of its high cost it is almost exclusively used where the object is to maintain a light color in the insulation, as in the case of the office wire spoken of, in which the braiding is done with yarns alternately red and white. Besides the Trinidad asphaltum, there are a large number of different grades, sometimes called, on account of peculiarities not possessed by the Trinidad variety, bitumens, although this name is sometimes also applied to the Trinidad; these waxes are far more definite as regards their melting points and permanency under slight variations of temperature and hence more suitable for use in the compounds for insulating wires; in most cases, however, as in the variety obtained from Cuba, the melting point is very high, which renders them exceedingly difficult to handle in the process of manufacture.

Some varieties, however, have a moderately low melting point and when melted become exceedingly liquid and penetrating, though when cold they are very flexible and somewhat sticky,—properties very advantageous to their use in wire manufacture. On account of similar properties considerable use has been made of artificial waxes or residuums from the distillation of petroleum alone and also mixed with linseed or other drying oils, but all such compounds have the property of becoming oxidized in the air, turning from a gum to a resin, and becoming exceedingly brittle with no power to repair themselves even when subjected to a moderate heat, which is one very valuable characteristic of all these natural waxes and gums.

This viscosity, which enables these materials to reunite at moderate temperatures when accidentally broken apart, is possessed in a very remarkable degree by rosin pitch or rosin oil, or indeed by almost all compounds of which they are important constituents. Therefore, when confined, as in the case of a lead-covered cable, they make an ideal insulating material; a mixture of rosin and its product under destructive distillation, rosin oil, produce a compound which is exceedingly liquid at the temperature of steam heat, capable of great penetrating powers, and one which when cold is not exceeded in insulation resistance by the highest grades of vulcanized rubber, besides possessing their valuable mobility at practically all degrees of temperature.

Although rosin and its compounds are liable to a hygroscopic condensation of moisture, there seems to be little or no absorption of water into the material itself, and while a paraffin cable will absorb enough moisture from the air to destroy several feet in a single night, I have known of cases where the open ends of rosin cables have remained in damp manholes for weeks with no apparent injury to the insulation of more than a few inches.

[TO BE CONTINUED.]

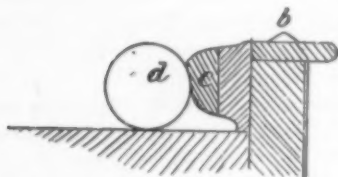
## RUBBER IN THE DEVELOPMENT OF BILLIARDS.

**I**N an article on the history of billiards, in the *New York Sun*, Mr. Mortimer T. Humphrey traces the evolution of the game from the time when it was played upon the ground, or the grass. Indeed, the bowling-green is pointed out as the progenitor of billiards; the date of the origin of the game is lost in dim antiquity. But rubber-men will be interested in what is said of the important place filled by rubber in the modern high development of billiards.

In 1835, he writes, cushions of India-rubber were brought into use in England, and later into the United States, and their introduction and departure from former methods in construction created wonderful enthusiasm among the amateur and professional players because of their excess-

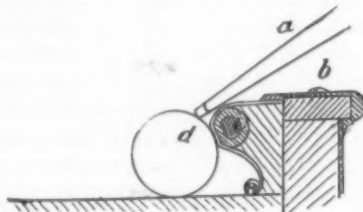
face of the cushion, and because of the breakage of the cork a strip of leather was placed over the face of the same to hold it in place. The great match between Phelan and Seereiter, on April 12, 1859, was played upon a table which was mounted with cushions thus constructed.

Later, further improvements in this combination cushion were made through the vulcanization of strips of canvas and a flat strip of hard rubber into the body of the solid elastic rubber immediately behind its face, and most satisfactory results were produced. These cushions became the rage, and so remained until the climax of improvement was reached in later years through the production of the "Monarch," a cushion which became the idol of the patrons of the game and is in general use to-day throughout



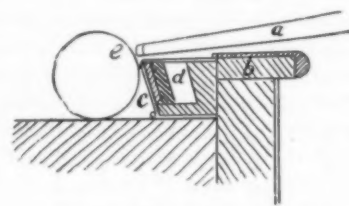
THE FORM OF THE CLOTH AND CRUDE RUBBER CUSHION OF EARLY TIMES.

b the cushion rail. c the cloth or rubber. d the ball.



PIPE OR TUBE RUBBER CUSHION OF 1850.

a the cue. b the cushion rail. c the tube rubber. d the ball.



THE COMBINATION CUSHION OF 1850.

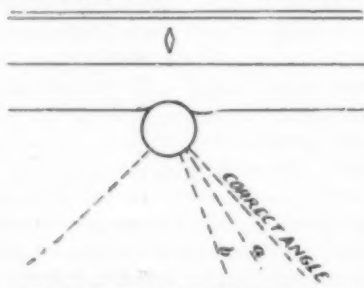
a the cue. b the cushion rail. c the leather facing. The cork lies between c and d. e the ball.

ive elastic qualities. Billiard-cushions previous to this time had been stuffed with tow, flock, hair, cotton, rags, cloth, and list, the two latter substances giving greater satisfaction to experts, because of their correctness in the production of the angles of incidence and reflection. The old cushions were similar in shape and form to the new crude-rubber cushions, but they were necessarily much slower. Later a vulcanized rubber-pipe cushion was invented in the United States, which met with considerable favor and came into general use. These cushions were common at the date of the invention of the combination diamond-shaped, square-jawed cushion in 1856.

This combination cushion was invented in New York city. The cushion was composed of elastic vulcanized rubber and a facing of a flat strip of cork, which, placed along the face of the cushion, prevented the ball from sinking or imbedding itself into the rubber to an extent which would cause the latter to form a shoulder, and often would resist the ball when played on to the cushion with strength and at an angle, to an extent which would give a response false to the calculation and an angle acute to that of the natural angle of reflection. The strip of cork answered the purpose for a time, but afterward it began to crumble, through the constant pounding of the balls against the

the civilized world. The "Monarch" cushion is simply a combination of vulcanized elastic rubber and a strip of Gutta-percha, the latter being held in place by a strip of canvas, both being molded into the solid rubber, so that the strip of Gutta-percha rests along the face of the vulcanized elastic rubber. This Gutta-percha held by the canvas so stiffens the face of the cushion that it resists and prevents the balls from jumping or riding over the cushion or becoming imbedded in the rubber.

During the last thirty-six years numerous improvements have been made in the construction of billiard tables, but the skill of the artisans of the leading American billiard-table manufacturers leaves nothing further to be desired. The French continued to use the old rag- and cloth-stuffed cushion until a very recent date. The shape of the table having varied from time to time from the square, the oval, the round, and the octagonal to the oblong, and in different countries in sizes from the 6 by 12 to the 4½ by 9, and oftentimes being made of a larger size in order to accommodate dimensions of small rooms, we find the manufacturers to-day turning out in America 4½ by 9 tables which are the most in demand wherever the three-ball carrom game is played. The professional three-ball carrom experts of the world, however, use the 5 by 10 table in all their match and tournament trials of skill.



BALL IMBEDDED IN THE RUBBER CUSHION.

The line b the angle from the crude rubber cushion. The line a that from the vulcanized rubber cushion. The line of the correct angle that from the Monarch cushion.

\*Republished here by the courtesy of the *New York Sun*.



## BRIEF ABSTRACTS OF RECENT RUBBER PATENTS.

**A**MONG recent patents issued by the United States Patent Office, embodying applications of India-rubber or Gutta-percha to a greater or less extent, have been the following. It is not practicable here to do more than to note the use of rubber in each case, with sufficient detail to enable those who are interested to decide whether or not to look into any particular patent more fully:

## SADDLERY GOODS.

482,041.—Horse-Boot. Hutson R. Hurd, Cleveland, Ohio.

An ankle-boot for horses, composed of an integral piece of rubber having a layer of fibrous stiffening material imbedded therein and having an upper tubular portion to fit upon the leg and a lower globose portion to enclose the joint, said globose portion thickened at its middle part and having a thin flexible free edge, and means for securing the boot upon the leg.

## MECHANICAL RUBBER GOODS.

481,702.—Tread for Stairs, etc. Jonathan Mason and Joseph Mason, London, and William S. Codner, Stoke Newington, Middlesex, England.

A tread for stairs and other purposes, consisting of a plate of hard metal, provided with ribs and undercut or dovetail-shaped spaces between the ribs, in combination with filling-pieces of soft non-slipping material, placed in the spaces.

## BOOTS AND SHOES.

482,134.—Shoe. Henry Newcomb, Corinth, Miss.

A Congress shoe having the elastic goring secured to the leather portion of the upper and provided with a lining extending beyond the edges of the leather and overlapping the inside of the goring and having fastenings securing the elastic threads or filaments to the web of the goring itself and to the extended lining, said fastenings being removed from and independent of the leather portions of the shoe.

482,561.—Heel. Allen R. Parkinson, Monongahela City, Pa.

A heel for boots or shoes, having an interior hollow extending below its sole, closed at the bottom and opening at and within the insole, in combination with a hollow or chambered rubber plug sealed upon the bottom or said heel-hollow and having an annular rim projecting within an opening in the insole.

## STATIONERS' SUNDRIES.

482,298.—Writing Pen. Frederick C. Colburn, Arlington, N. J., assignor to the Arlington Manufacturing Co., New York city.

A non-corrosive writing-pen composed of pyralin or other pyroxiline compound which is unaffected by moisture and adapted to be cut or trimmed.

483,072.—Ink-Well. John W. McDonald, Pittsburgh, Pa.

In a fountain ink-well, a centrally-apertured diaphragm formed of flexible rubber, the body thereof immediately surrounding said central aperture being thinner than that part of the diaphragm of greater diameter and next the circumference thereof, the said parts of different thickness being joined by the rubber of the diaphragm, forming an annular channel in the face thereof, as shown and described, and for the purpose set forth.

## DRUGGISTS' SUNDRIES.

482,388.—Pad for Bed-Pans. Katharine A. Shaffer, Harrisburg, Pa.

As an improved article of manufacture, an inflatable bag composed of rubber provided with hooks and an inflating-tube and the rivets for securing the sides together.

482,407.—Convertible Atomizer and Sprayer. John R. Magee, Toledo, Ohio.

In a convertible atomizer and sprayer, a compressible bulb, a top portion secured thereon, having a cup-shaped portion, and a flanged ring upon the same, in combination with an upper and

lower foraminous diaphragm and an intermediate removable fabric packing, and a douche removably secured within the flange of the ring.

## "NOTIONS."

482,647.—Tennis Glove. Clarence C. Obear, St. Louis, Mo.

As a new article of manufacture, a rubber tennis-glove having the palm lined with a suitable felt, whereby the moisture from the hand will be absorbed and the glove prevented from slipping on the hand.

482,773.—Bathing-Cap. Harry B. Williams, Brooklyn, N. Y.

A bathing-cap comprising, essentially, two separate flat disks of waterproof material attached together at the outer edges, the lower one being elastic and having a head-opening in it and an elastic rubber band attached around the edge of the head-opening and flatwise upon the said lower disk.

482,963.—Suspenders. Emil Gutmann, New York city.

The process described for manufacturing suspenders, consisting in matching together and cementing the end of the webbing and a central piece of properly-shaped unvulcanized rubber, coating and saturating a sufficient length of the webbing adjacent to the end, applying one or more pieces of fabric for each button-hole, cementing an additional sheet of unvulcanized rubber on each face, and inclosing and vulcanizing the whole.

## TIRES.

481,981.—Pneumatic Tire. Joseph Wellstein and Morgan E. Maxfield, Milwaukee, Wis.

Pneumatic tire consisting of an inner air-tube, a rubber-coated binding wound thereabout, a flexible band of spring metal surrounding the central tread line of the tube, a flat spring wound continuously about the tube, a rubber-coated binding interposed between the strips and the spring, a similar binding wound about said spring, and an outer inclosing-tube.

482,173.—Vehicle-Wheel. George Hollafolla, Syracuse, N. Y.

A vehicle-wheel comprising a hub, spokes, and two fellys substantially parallel to each other, connected together by a band of elastic material strung through loops arranged alternately upon the two fellys.

482,182.—Pneumatic Tire. Charles M. Lungren, Bayonne, N. J.

The combination, in a vehicle-tire, of a wheel-rim and a surrounding flexible envelope adapted to be distended to shape by compressed air, the envelope being non-expandable at its outer part and expandable at its inner part and the wheel-rim being arranged to form a supporting center for the flexible envelope when it is relieved of its compressed air.

482,392.—Cushion Felly and Tire. Charles Stein, Meadville, Pa.

The combination with the felly having side sockets and the central bend, the middle portion of the bend bearing against the body portion of the felly, of the hollow tire having a concaved inner portion and having shoulders to fit in the sockets of the felly.

482,487.—Pneumatic Tire. Lucius J. Phelps, Passaic, N. J.

The combination, with a rim having surfaces inclined upward and outward on each side of the outer face of the rim, of a pneumatic tire secured on the outer side of said rim by wires carried by but loose in the edges of the envelope and lying on the inclined surfaces of the rim, said wires having their ends secured to the rim by hooks or equivalent means and provided with extensions beyond the hooks for drawing up the wires.

482,819.—Elastic Tire. Curt Wagner, Oederan, Germany.

The combination, with the semi-circular rim or felly of a wheel provided at its upper lateral edges with bearing-surfaces,

of a semi-circular elastic tire having its ends seated upon said bearing surfaces of the tire and secured to the latter and a spring arranged intermediate the tire and felly and having alternate large and small convolutions, said spring forming a yielding support for the tire intermediate its ends, as described, for the purpose specified.

#### ELECTRICAL APPLIANCES.

482,149.—*Electrical Circuit and Cable.* John A. Barrett, Brooklyn, N. Y., assignor to the Standard Underground Cable Co., Pittsburgh, Pa.

An electric circuit, consisting of a pair of naked conductors, one or more strands of cord, tape, or similar insulating material lying between the conductors and one or more strands of similar material wound about the conductors and intermediate strand or strands and crossing the latter alternately on opposite sides, said strands being constructed and arranged to form a greater thickness of insulating material between the outside conductors.

482,150.—*Electric Conductor.* John A. Barrett, Brooklyn, N. Y., assignor to the Standard Underground Cable Co., Pittsburgh, Pa.

An electric conductor or group of conductors having a covering consisting of a strip of paper, cloth, or other flexible material wound spirally about the conductor or group of conductors and provided with tucks extending transversely to the lines of flexure, the overlapping edges of the successive windings being gummed together.

482,151.—*Electric Conductor.* John A. Barrett, Brooklyn, N. Y., assignor to the Standard Underground Cable Co., Pittsburgh, Pa.

In an electric cable the combination of a plurality of independent circuits, each circuit consisting of a pair of conductors formed into a single oblong strand, the distance between conductors of the same circuit being greater than that between conductors of adjacent circuits.

482,152.—*Electric Circuit and Cable.* John A. Barrett, Brooklyn, N. Y., assignor to the Standard Underground Cable Co., Pittsburgh, Pa.

A single strand anti-induction electric circuit consisting of a pair of flat conductors held in position edgewise with relation to each other by insulating material between and about the conductors.

482,177.—*Electrical Conductor.* Philip H. Holmes, Gardiner, Me., assignor to the Holmes Fiber Manufacturing Co., Chicago, Ill.

An electric conductor composed of particles of electric-conducting carbon united by an oil-binder and disposed in strata which lie in planes parallel with the direction of the current.

482,181.—*Electric Connector for Hose.* Charles F. Kellom, Delair, N. J.

A hose coupling having one of its collars provided with a gasket and the other collar provided with fingers, a segmental ring sealed on said gasket, adapted to contact with said fingers, and electric wires connected with said ring and fingers.

482,207.—*Electric Insulator.* William H. Clark, Brooklyn, N. Y.

An insulator for electric wires, having a screw-threaded stem and a flat collar over said stem to protect the same from moisture, said insulator having a square hole in its lower end and being provided with a depression in its top and with side projection.

482,718.—*Composition Coating for Paper Tubes.* Sigmund Bergmann, New York city, assignor, by mesne assignments, to the Interior Conduit and Insulating Co., same place.

A coating for a tube or conduit, consisting of a mixture of plumbago and plaster of Paris.

482,872.—*Insulator.* Charles T. Lee, Boston, Mass., assignor to the Johns-Pratt Co., Hartford, Conn.

An insulator comprising an insulation-block composed of a series of sheets of mica compressed and compacted together, the said block having a parallel-sided seat formed thereon, and a metallic shell or casing inclosing or partially inclosing the said block, tightly compressing the seat thereon, and held on the seat by frictional contact.

482,753.—*Insulated Electric Wire.* Thomas L. Reed, Providence, R. I.

1. A conducting wire covered with a textile wrapping filled with a composition of bitumen, wax, and oxidized or oxidizable

oil. 2. A conducting-wire covered with a textile wrapping filled with a composition of petricite, wax-tailings, and linseed oil.

482,328.—*Electric Cable.* John A. Barrett, Brooklyn, N. Y., assignor to The Standard Underground Cable Co., Pittsburgh, Pa.

The combination, with electric conductors forming one or more circuits, of a core upon which said conductors are arranged at a distance from each other and insulating material binding said core and conductors together, said core consisting of a hollow structure constructed to provide fixed space for dry-air and insulation between said conductors.

483,074.—*Joint for Electric Conductors.* Joseph W. Marsh, Pittsburgh, Pa., assignor to the Standard Underground Cable Co., same place.

The combination, with the adjacent ends of the cables having a series of insulated metallic conductors, of a block of insulating material having peripheral recesses for the reception of the ends of the conductors, sleeves of conducting material embracing the adjacent ends of the corresponding conductors and fitting the recesses in the block, and insulating material surrounding the block and confining the sleeves in said recesses, the whole being provided with insulating material to form a substantial joint between the cables and adapted to maintain the united ends of the corresponding conductors in proper relation with each other and the adjacent conductors.

483,110.—*Manufacture of Rubber-Coated Wire, etc.* Theodore Guilleaume, Cologne, Germany.

The apparatus for applying successive seamless layers of rubber or rubber compound to a wire, rope, or cable, comprising a coating apparatus having a die through which the wire is drawn, a refrigerating or cooling apparatus through which the coated wire passes, a second coating apparatus provided with an inner die, having an elongated bore tapering at the exit end inwardly toward its axis to its extreme outer end, and a second refrigerating or cooling apparatus through which the wire with the double coating passes.

#### MISCELLANEOUS.

482,176.—*Composition of Matter.* Philip H. Holmes, Gardiner, Me., assignor to the Holmes Fiber Graphite Manufacturing Co., Chicago, Ill.

A process of making a plumbago and carbon compound, said process consisting, essentially, in, first: mixing plumbago and fiber; second, subjecting the mass to pressure; third, drying the mass; fourth, immersing it in oil, and, finally, baking the mass to carbonize the oil and fiber.

482,786.—*Resonator.* Henry Crocker, Fairfax, Vt.

A hollow chamber made of a flexible material having an opening which can be so altered in shape as to resound at will the fundamental tone or mix together the fundamental tone and the overtones, an opening for the reception of the sound, or the sound-producing device, and a tube or conduit connecting the flexible hollow chamber with a sound-producing device.

#### Flexible Metallic Tubing.

A NEW flexible tubing, which is made entirely of metal disposed in a very ingenious manner, is being introduced by a London firm. The tubes are produced by a machine from strips of metal of the required length, width and thickness. These strips, in passing through the machine, are corrugated longitudinally with a large and a small corrugation side by side. The tube is formed by the corrugated strip being coiled spirally round a mandrel in such a way that the small corrugation enters and inter-locks with the large one, and forms what is known as a piston joint. Formerly this kind of flexible tubing was made steam- and water-tight by means of a strip of India-rubber inserted in the interlocking corrugations. This tubing, it is said, answered well for many purposes, but in some cases the substance passed through caused the India-rubber to deteriorate.—*The Age of Steel.*



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## Editorial Jottings.

NANCY HANKS, after her trotting days are over, will deserve a handsome pension from the rubbermen in return for the benefit to their trade resulting from the interest which her achievements on the track are certain to develop in the use of elastic tires for other wheels than those of bicycles. It is estimated by those who ought to know, that no less than a thousand tons of rubber is now used for bicycle-tires alone, and yet this industry is only in its infancy. The time may be estimated in months since the first successful rubber bicycle-tire appeared, and already the steel tire has been completely superseded. The bicycle is no longer to be looked upon as a mere fad, or plaything. The "wheel" is an established institution as an aid to healthful exercise, and it cannot be doubted that it is daily coming into wider use as an article of utility, either as a means of travel for considerable distances or for going to and fro on business errands. There cannot now be discerned in any direction the slightest indication that the bicycle is losing its popularity, or that its use will ever decline. As to the use of the pneumatic-tired sulky, it may be said, to begin with, that this is the greatest country in the world for sports. Our population is larger than that of any other country with which we rank in point of intelligence and culture, and the well-to-do class form a larger element of our whole population than is true of any other country. Our people have time and the means to avail themselves of numerous holidays, and for amusements and recreation in all seasons. Everywhere the turf is resorted to more or less as a means of amusement, and however moralists may decry the running of horses, it is certain that in our age at least this sport is not likely to lose any of its popularity. On the contrary, interest in it is bound to increase from the introduction of a new factor in speed in the shape of the rubber-tire, which is considered by so good an authority as Robert Bonner, the owner of Dexter, Maud S., and Sunol, as equivalent to a reduction of five seconds in a mile. Manufacturers, realizing that the maximum rate of speed has not yet been attained, will now devote their energy, and all the inventive skill that they can control, to the production of vehicles which will enable the trotting-horse to approach a two-minute record. The result of turning so much intelligent attention to the development of the best possible rubber-tires for vehicles for the race-course is bound to have its effect upon the production of rubber-tires for pleasure vehicles to a greater extent than otherwise would have been probable.

PEOPLE of an inquiring turn of mind have been devoting some investigation of late to the comparative merits of rubber and steel tires in relation to the matter of speed. The character of the track or road-bed must be considered in this connection. The perfection of wheel traveling would be with a mechanically perfect wheel,—not with pneumatic elasticity, but rigid, like the old steel-tired wheel,—upon a perfect surface. With these conditions it would be possible to complete a mile in a shorter time than



with the use of any elastic wheel ever invented, but the trouble is that it is impossible to make a track of the required solidity and smoothness upon which it would be practicable for an animal to trot. The elasticity of the rubber results in a greater resistance to its contact with the level. The rigidity of metal resists resistance in this motion, and therefore reduces it. Since a perfect road-bed cannot be made for a trotting race, the pneumatic tire, on account of its being the best for meeting the defect inseparable from the road-bed, makes the fastest wheel. It is on the same principle that the rubber tire has proved so successful on the bicycle. As roads must be taken as they are found, and are not constructed expressly for the use of bicyclists, the rubber-tired machine proves the best that has yet been made for the comfort of the rider. As there is no probability that a wheel better suited to traveling in general will be found than the one which embraces rubber in its construction, competition will busy itself with producing the rubber tire best suited to the conditions to be met.

THE more we can learn of the character of the world's supply of rubber, the more evident it becomes that we are but upon the threshold of the great rubber forests. The correspondent of THE INDIA RUBBER WORLD who has been pushing towards the sources of the Amazon river, noting the vast forests of rubber which line the banks of that stream, and also the remarkable great tributaries to the Amazon, which each traverses hundreds, if not thousands of miles of rubber-producing country, confirms the already existing opinion of well-informed men that scarcely a beginning has been made in the surveying of the capacity of Brazil alone to furnish the world's markets with rubber. To-day the best of our rubber comes from the most remote and the least explored of these Brazilian territories. It is gathered by an ignorant population, without system, by the most primitive of methods, and yet instead of falling off, the supply increases year after year at an extraordinary rate. To quote from an official statement just published in Washington, the imports of crude rubber for the first eight months of the present year exceeded in value, by more than \$5,000,000, the average importation for several years past, and this at an average of a lower price per pound. THE INDIA RUBBER WORLD has never been an alarmist in regard to the possibility of rubber becoming scarce in the near future. It is wise, however, in any situation, to be prudent in the use of natural resources. Within the present generation it would have seemed extremely foolish to most people to discuss the possibility of exterminating the buffalo from the Western prairies; and yet, the race of those valuable animals has become so nearly extinct that it is probably impossible by breeding among the few sorry specimens left to produce a single well-formed, able-bodied buffalo. It is just as possible in the case of rubber, when the possibility of gathering it with ease, and other conditions attending the rubber trade, became more generally known, that such a rush for the forests shall occur as to suddenly and greatly decrease at least the more accessible natural supplies. While no pressing demand exists that anybody should begin culti-

vating rubber to-day, it is wise that every influence which can be marshaled in behalf of rubber-tree protection, should be employed in this cause. Nor can we believe that it would be an unwise investment of capital to undertake the protection and cultivation of trees at points nearer our manufactories than the remote parts of Brazil. The most important consideration at present is the fact that with such enormous and as yet unexplored fields of rubber trees it is impossible that the crude-rubber trade should be "cornered," as the expression now is, or that rubber should become so scarce within our lifetime as to make it permanently higher in price. On the other hand, we feel that the reduction of the cost of rubber is to be looked for. The organizations in the rubber trade to-day are among consumers,—that is to say, large manufacturers of rubber,—rather than the producers, or the rubber exporters in Brazil. We feel that this will long be the case. It is much easier to corner the manufactured products than to limit the production of raw material. To say nothing of the rubber sources in other parts of the world, the forests bearing rubber in Brazil cover a territory perhaps almost half as large as our own United States, and there is slight possibility that the lands covered by these forests will ever become the property of any corporation, no matter how alluring the prospect of acquiring the possession of these lands may be to people of capital.

It is a matter of interest to note the growing importance of American capital in the Brazilian rubber trade. In the last authentic statement published of the exports of rubber from Pará, twenty firms of exporters from that port are named in addition to those who make shipments direct from Manáos. Two of these twenty firms are American, and one of them not only ships more rubber to the United States than any other firm in the business, but is the largest exporter of rubber to all parts of the world from that port, having shipped during the first six months of the present year more than one-fifth of all the rubber coming down the Amazon river, and nearly one-third of all the direct shipments from Pará. This company was, particularly, the largest shipper by far of fine Pará rubber. It is impossible to say what the effect will be upon the rubber shipping business of the improvement which is being made in the steamship service between this country and South America. The steamship company flying the United States flag have rendered heretofore a very limited service. They have made bids recently for carrying the mail under the new subsidy law, and their plans embrace a mail service as far south as Buenos Ayres. It is to be supposed that this will improve the service of the line all the way between New York and the southern terminus of the line, which will embrace Pará. It still remains to establish some more direct means of financial exchange with Brazil than now exist between that country and the United States.

A VERY neat device for table-mats is used in many lunch-rooms in Boston. It consists of a thin piece of corrugated matting cut in the form of an ellipse, the extremes measuring twenty-four by twelve inches.

## NEW GOODS AND SPECIALTIES.

THE Wales-Goodyear Co. are putting upon the market this season a novel article of footwear called the "Hickory" boot. While it is designed especially for lumbermen's wear, yet it is equally well adapted to the wants of the farmer, the dairyman, the teamster, and all others who want a strong, durable boot that is not as heavy as the ordinary rubber boot, but which has all the good qualities of one below the ankle, and of a leather boot above, without the undesirable qualities of either. It consists of a very strong, durable foot-portion joined to a leg made of canvas or duck, and derives its name "Hickory" from the quality of the latter fabric, which is made expressly for this use and is warranted not to crack, or snag, and to be in every way serviceable. Foot and leg are joined together in a waterproof seam, which is reinforced by a row of "standard rivets," making it perfectly impossible to rip, or break, under the roughest use. Around the top of the boot-leg is a lacing arrangement by which it can be closed tightly around the leg of the wearer to keep out the snow, dirt, hayseed, and other trash which will get into boot-tops when the "breeches" are "worn in the boots."



The "WW" width of this boot is calculated to be worn over the heavy "German" or lumberman's sock. The rubber foot comes up about as high as the ordinary "ankle boot" or "perfection over," but there the likeness stops, for the "Hickory" boot does not have to be buckled or laced, and yet not a particle of snow can get in at the ankle. Indeed the wearer of the "Hickory" boot can step into the water high enough to "swamp" an ankle boot in an instant, without any inconvenience and without wetting his foot, for while the canvas is not strictly water-proof, yet it will keep out the water to a certain extent, and of course it will keep out the snow completely. Owing to the fact that the rubber does not need to be closed in around the ankle, the foot of the wearer is much better ventilated, and consequently is dryer and warmer than when the ordinary rubber shoe or boot is worn. Above the ankle, too, the canvas leg will protect the stocking and add very much to its durability as well as its warmth.

Because of the lightness of the boot, and the extreme flexibility of the ankle, this boot is much less clumsy to walk in than either the rubber or the heavy leather, or the ordinary felt boot. With a pair of good heavy socks inside of the "Hickory" boot, laced tightly at the top, it would seem that the wearer could defy the bitterest cold and the deepest snows, and yet not be weighed down too heavily for active work. Beside the "WW" for lumbermen, "Hickory" boots are made in the regular "F" and "W" widths, and will be worn, without doubt, in many places where heretofore the more expensive, more uncomfortable, and less durable rubber boot has been used. They are not watertight to the top, but they are watertight as high as any rubber shoe, and are more watertight than a leather boot. They cannot in all places be substituted for rubber boots, but they have many advantages.

## Matthews's "Perfect" Flexible Ruler.

THE inventor of the article illustrated herewith is O. S. Matthews, who has given to this article the result of careful study

and long experience, and who thereby has produced something that will be of interest to bookkeepers and all who have occa-

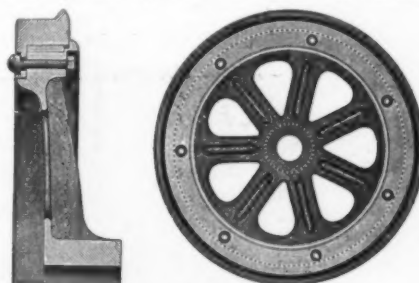


NEW FLEXIBLE RULER.

sion to do ruling. The article is manufactured of combination hard and soft rubber, handsomely mounted and polished and carefully finished. The ruler is so flexible that it conforms readily to uneven surfaces, and the edge is of a kind to permit the pen to slide against it with ease and certainty of results. The makers point out that there is no clotting, blotting, or soiling of the fingers, and no unsightly smears from contact with freshly ruled lines. In this it entirely obviates the annoyance and inconvenience often experienced with old style rulers. Bookkeepers who take an interest in their work, and desire to keep their books in the neatest possible condition, will undoubtedly be interested in this device. Manufactured by the B. F. Goodrich Co., Akron, Ohio.

## Rubber Cushion Car-Wheel. ✓

THE accompanying drawings illustrate the construction of the new steel-tired cushioned car-wheel, which is recommended for simplicity, durability, safety, and economy in repairing and in renewing tires. The center is constructed of steel-casting or of cast-iron, is of as light a section as is consistent with safety, and in form is somewhat similar to the ordinary single-plate chilled car-wheel. It is fitted on the axle and is not intended to be removed in case of repairs to the wheel. The tire is of regular standard form at the tread, is provided with an inwardly projecting annular flange, formed on the outer face for the purpose of not only securing the tire to the wheel center, but also



RUBBER CUSHION CAR-WHEEL.

for receiving and counteracting the end thrust of the wheel center when flange of tire strikes the rail. There is also a peripheral lip formed on the wheel center at its inner face, over which a portion of the end thrust is distributed, thus relieving the flange of some of its working stress. The tire is secured to the center with either rivets or bolts passing through the tire inner flange and the wheel center, at which points the metal is increased to compensate for the loss of strength occasioned by the drilling for bolt holes. The bolt holes in the inner flange are drilled  $\frac{1}{4}$  larger than the body of the bolt or rivet, to give ample clearance in all directions, and allow for the compression of rubber cushion; bolts fit snugly the holes in wheel center.

It will be observed that the securing flange of the tire is formed on its outer face, and that the inner surface of the tire or bore is also tapered inwardly. This was designed particularly for the purpose of permitting the removal of tire without necessitating the removal of center from axle. Repairs can be made by any competent workman at the usual workshops of the railroads, thereby saving time and expense of removing the wheel and shipping it to the makers. The cushion is made of dense combination rubber, interposed between the periphery of the center and the inner surface of the tire, and has its outer surface encircled with a shield of either sheet steel or No. 20 iron, which is provided to prevent crimping of the cushion when pressing on the tire. The life or elastic durability of the rubber cushion is prolonged indefinitely by reason of the safeguards or lips formed on the wheel center, taking up any excessive stress that may be brought to bear on the wheel by any sudden blow. The inventors and builders of this wheel are B. F. Hough, lately of a firm of architectural iron-works in Indianapolis, and P. F. Leach, formerly of the Pullman Palace Car Co. They give a long list of cable and electric street railroads which have adopted this wheel in their equipment. The manufacturers are the Cushion Car-Wheel Co., of Indianapolis, Indiana.

#### Rubber Heels for Walking-Shoes.

THE readers of THE INDIA RUBBER WORLD will doubtless remember an article published in this journal last year on a memoir by M. A. Colin, a French medicine major, on the success attained in the French army in the use of an India-rubber heel

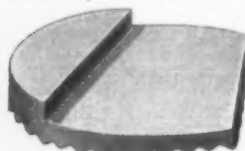


FIG. 1.—PERSPECTIVE VIEW OF THE HEEL.

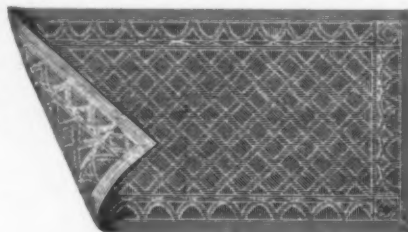
for walking-shoes. The object aimed at was to give a spring to the step and avoid the jar of uneven surfaces and the tiring of the muscles due to long walking on hard roads. The French writer named asserted that the striking of the heels on stone pavements, especially, produces a concussion which is communicated to the brain and acts injuriously upon the nerves. This evil is not noticed in ordinary walking, on account of the short distances, but medical men are learning that headache and other ailments are traceable to the results of the shock of the heel reacting upon the entire organism, through which it transmits a perceptible vibration by means of the bony structure. The use of the rubber tire on the bicycle to prevent the jarring of the rider has been adopted almost universally among cyclists in recognition of a like principle. The use of the rubber heels in this country has been attempted by several experimenters. In the illustrations accompanying this paragraph are shown a heel for attaching to walking-shoes, patented and manufactured by J. K. Krieg & Co., No. 39 Warren street, New York city. It does not follow the lines suggested by M. Colin, with respect to details, but is a rubber cap to the heel. The manufacturers invite correspondence from shoe-dealers with a view to putting this article on the market.



FIG. 2.—THE HEEL ATTACHED TO THE SHOE.

#### A New Line of Rubber Mats.

THE Gutta-Percha and Rubber Manufacturing Co., of New York, have lately introduced a line of double-surface and reversible corrugated rubber mats, matting, and stair-treads, for which they have applied for letters patent.



REVERSIBLE RUBBER MAT.

The advantage of the reversible pattern can be readily seen, as it can be frequently turned, and will, therefore, having two surfaces, last twice as long, at a cost of only 15 per cent. more than the single mat. The mini-

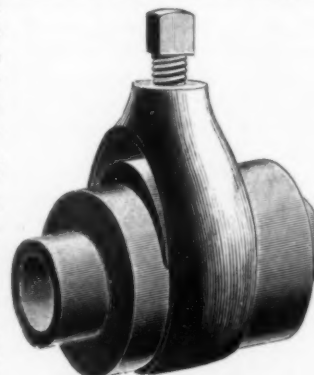
mum thickness of the matting is  $\frac{1}{4}$  inch, and the weight is ten pounds per square yard. An extra-heavy pure-gum rubber matting is made with a minimum thickness of  $\frac{1}{4}$  inch. The latter will withstand great wear and tear, and is very elastic to the feet. A maximum-sized mat in the reversible pattern measures three by twelve feet, and can be made larger on special order. The body of these mats is of course in the center, and the accompanying illustration will furnish a good suggestion of their utility. The same company have lately introduced a new design for a rubber mat, the patent being issued to Henry E. Spadone, vice-president of the company. Its use is for pitchers; it is well made, and is the only white pitcher-mat on the market, offering quite a relief to the appearance of some other mats. The diamond-pattern compares very favorably with the usual one of corrugated rubber, and the circles which form the border are pleasing to the eye. The illustration is a better description of the design.



PITCHER MAT.

#### Kelley Adjustable Hose-Clamp.

THESE bands may be used for all purposes where hose is used, and from their shape and strength are guaranteed to hold the pipe tight, no matter what pressure may be brought against them. The clamp can be adjusted to fit either three- or four-ply hose, and the adjustment only occupies a small amount of time. The fact that a variety of sizes does not need to be kept in stock is a desirable feature for dealers and one that will doubtless be appreciated. The inner side of the clamp is perfectly smooth, so that there is no chance for the surface in any way to cut or break the hose. As they are made very strong and of the best metal, they are practically indestructible, and are so simple that they can be put on or taken off by any person without injury to the hose. By tightening or loosening a set screw any amount of pressure can be put on the hose and a perfectly water-tight joint secured. Manufactured by J. L. Kelley, Erie, Pa.



KELLEY ADJUSTABLE HOSE-CLAMP.

#### A Simple Flue-Cleaner.

THE question of cleaning flues is one that interests almost every manufacturer. There is shown in the accompanying



illustration a light and simple cleaner which is already used in many fire-rooms. It is so arranged that one can hold it in the hands firmly, and, by pressing a little against the flue, the steam is admitted through the length of hose; the valve closes and the obstruction in the flue is blown out at the other end. These are made of the best brass steam metal and a fine grade



A SIMPLE FLUE-CLEANER.

of rubber steam-hose and will with ordinary care last a long time, as the metal will neither rust nor corrode, while the rubber, being specially prepared for the work, has great durability. A long or short boiler can easily be cleaned by adjusting the guide-screws in the cleaner-head, and no soot is left on the back or end of the flue by these cleaners. Manufactured by J. L. Kelley, Erie, Pa.

### Rubber Imports and Exports for August.

THE imports of India-rubber and Gutta-percha for August, compared with the same month one year ago, are thus stated by the Government reports:

	1892.	1891.
India-rubber, pounds.....	2,268,259	\$1,477,097
Value.....	\$1,908,182	\$764,460
Gutta-percha, pounds.....	26,136	26,934
Value.....	\$9,527	\$12,554

From the beginning of the year, including August, the imports of both commodities aggregated 2,294,395 pounds, against 1,504,031 pounds for the same period of 1891.

The value of rubber shoes exported is stated at \$11,667, against \$9852 in August, 1891. The value of other manufactures of rubber is stated at \$10,247, against \$84,522 in the same month of last year. Imports are reported of India-rubber goods valued at \$28,793, and of Gutta-percha goods valued at \$24,151.

### Progress of the United States Rubber Co.

THE various companies comprising the United States Rubber Co. have now passed within its control and are directed from its main office, at No. 16 William street, New York. Few or no changes have been made or are contemplated in the working staffs of the various old companies for the present. As already mentioned, the management of the new company has been placed in the hands of an executive committee composed of Robert D. Evans (chairman), Henry L. Hotchkiss, Charles L. Johnson, Samuel P. Colt, George A. Lewis, W. C. Martin, and Charles R. Flint. It is stated that the stock of the new company has been issued, so far, to the extent of \$26,000,000.

### A Customs Decision on Elastic Goods.

THE United States Board of General Appraisers have lately made the following decision with reference to paragraph 354 of the Tariff act of 1890. In the first section, which specifies cotton cord, boot-, shoe-, and corset-laces, the decision is that such goods, inasmuch as the component part of chief value is India-rubber, shall be dutiable as such, and pay 35 per cent duty. In the second section, which specifies cotton gimp, gor-

ing galloon, webbing, suspenders and braces, elastic or non-elastic, a duty of 40 per cent is fixed. The words *elastic* or *non-elastic* are governing in this section, as nearly as can be judged of the intent of the law, and the appraisers therefore decide differently from what they would were the text of the first section used.

### Every Business Man Must Fail Some Time.

I HOLD the opinion that every business man will fail or collapse if he sticks to the channels of trade long enough, says W. B. Field, of St. Louis, in the *Shoe and Leather Gazette*. It is stated that more than 90 per cent. of our business men fail. There must be at least 5 per cent. who die in the harness, leaving some 5 per cent. who retire from business successful. This is an appalling record, but it is nevertheless true. It shows that there is something radically wrong somewhere, but as to where the mistake is made there are differences of opinion. There is no doubt about there being too many men engaged in trade, but how to reduce the number is a decided riddle. However, the business men themselves are the causes of their own condition of danger. Most of them stick to business too long. They cannot perceive the time to quit when it arrives. The methods of business change so rapidly and yet so imperceptibly that a merchant becomes involved before he realizes it, and is then powerless to offer opposition. Business is largely a matter of judgment, and the best man in the world will err in this quality. That is why I say all men will fail if they remain in trade too long. It is only a matter of a difference of duration. Some men are able to hold the reins for an average lifetime. Such a man is Russell Sage, whose shingle has been out since he was eighteen years old. Others are ruined by business associates, like Cyrus W. Field and General Grant. There are some who know when they are well off and drop the cares of business to devote their time to travel, improvement of the mind, pleasure, charity or what not. They reap the rewards of their labor, and are fortunate in being wise enough to recognize the advantages they possess. However, it is difficult for a business man to retire. He isn't satisfied to quit making money and become idle. Long association with trade makes him out of place outside of his office and he continues to stick to the desk until old age, death or bankruptcy forces him to lay aside the ledger forever.

### Cables for Land Telegraph Lines.

THE A. G. Day Co., of Seymour, Conn., have received an order for one of their kerite cables to be strung from New York to Buffalo. It is to have eight conductors, is an inch in diameter and is about 300 miles in length, and weighs 2500 pounds to the mile. Naturally such a cable is perfect in its insulation, but there is another factor in the adoption with advantage of it for long distances. One traveling through the country is surprised, if he notes it at all, at the actual and enormous number of wires that he sees everywhere. They are on both sides of the right of way of railways, and if counted sometimes there will be one, two or more hundred on a single pole. On the turnpikes it is almost as bad, and the difficulties of stringing them are much greater on account of growing foliage. Among so many wires breaks and "crosses" are always happening and the expense of keeping them in repair is a matter of consideration. The chief consideration is, however, to find room for the wires and the combination in cables is about the only way left. There will be a great many of these cables ordered in the future, and insulated wire men are carefully watching the progress made in this direction.

## TRADE AND PERSONAL NOTES.

THE Hartford Rubber Co., now practically absorbed by the Pope Manufacturing Co., have elected the following officers: Albert A. Pope, president; H. H. Francis, secretary; George H. Day, treasurer. Plans have been made for extending the business by the erection of more buildings and the purchase of new engines. About 170 hands are employed, producing \$500,000 worth of goods in a year. As the factory is run on the double turn the greater part of the year, the necessity for extensions and improvements is apparent, especially in view of the sulky craze that has lately sprung up.

—The F. J. Kaldenberg Rubber Co., New York, have a new organization; Cheever K. Dodge now being manager; W. H. Bennet, formerly of the Tyer Rubber Co., superintendent; and F. Phelan going on the road. The company have enlarged their facilities materially, putting in two new heaters,—one twenty-five feet and the other fifty; also a new 150 horse-power boiler, with a new belt-press. The company have been very successful in disposing of their syringe- and atomizer-tubing, selling, as they put the phrase, "barrels of it." They are also furnishing a large quantity of car-springs to the John Stephenson Co. and the Rogers Locomotive Works.

—The rubber importers are not by any means indifferent to the appeals of the cholera-stricken. Among those active in supplying the wants of Hamburg, the most afflicted of all civilized cities, appears the name of G. Amsinck, the well-known New York merchant.

—The machinery of the Boston Car Spring Co. is for sale and is in the hands of James E. Leach, No. 40 Water street, Boston.

—Randolph Brandt, of New York, reports a good business in Selden's Packing in this not over-prosperous year to many in the mechanical line. Some large orders have gone to the West Indies and Mexico.

—The Atlas Rubber Co., of New York, since the return of Mr. Herbert from Mexico, have received very good orders from that country. Mr. Herbert is now on a trip of two months in the Northwest and is meeting with flattering success. The demand for atomizers this season opens well, as is also the case with syringes. Mr. Doty, when asked what was the effect of a cholera epidemic on the demand for druggists'-sundries, said that he did not believe it would create much business in that respect. After all, the number of cases in a cholera epidemic is not great, and the result upon this particular line of trade would be trifling. Speaking of the new combination of mechanical-goods companies, some of which are engaged in the druggists' sundries business, there could be no change. Those companies had been in the business ten years, and there could be little more effected in any new methods of securing business. A very good business this year is being done in rubber bands, the use of them everywhere becoming more and more common.

—The Magnolia Anti-Friction Metal Co., of New York, have issued a circular showing by diagrams the growth of their sales since 1886. The amount in 1891 was 22½ times larger than in 1886 and 1887, and it is estimated that it will be thirty times as large in the current year. The metal is adapted to all classes of mechanical bearings, and has a great reputation for its low coefficient of friction, its durability, its economy in oil, and its cool running. The adoption of this metal by several important governments is also confirmatory of the accuracy of public opinion in regard to its merits.

—But little rubber goes to England from Matto Grosso, and none comes to America, so that the information that the political affairs of that State are becoming quiescent was received with due equanimity by the importers of New York.

—Among recent consignments to New York there were, by the Panama line, thirteen tons of rubber scrap from San Francisco. Liverpool people are offering freely old Russian shoes to our dealers. The single lot of Russian shoes now stored in New York is apparently sufficient for all requirements in cholera times.

—The Foster Engineering Company, of Newark, N. J., have a card in the advertising pages of this journal which cannot fail to prove of interest to the rubber trade. The Foster Pressure Regulator and Reducing Valve, of which they are the sole manufacturers, is highly appreciated by many rubber companies. In fact, the service it performs cannot well be dispensed with. The company have testimonials of the highest and most enthusiastic character as to the merits of this valve. Mr. I. N. Baker, formerly secretary and business man for Colonel Robert G. Ingersoll, has lately associated himself with Colonel J. M. Foster in the management of the Foster Engineering Co., and Mr. J. S. Mundy, of hoisting-engine fame, has become its vice-president. The company is a strong one in every way, and they are meeting with an enlarged and deserved success.

—The purchase by the Herbert & Rapp Co., manufacturers of the celebrated Hub Gore, of the Brighton mills, at Camden, N. J. where the Blue Star goring is made, has been reported in some quarters to be the beginning of a gigantic trust. This is denied at length in the Brockton (Mass.) *Enterprise*, upon the authority of the Herbert & Rapp Co., with the additional statement that no person besides the firm mentioned is interested to the extent of a cent in the company's recent purchases. The facts, according to the *Enterprise*, are that the Brockton company, finding their plant inadequate for the demands of their trade, availed themselves of an opportunity to purchase two plants, well equipped and ready for operation. The Camden plant started under the new management on September 26. It is expected that all the interests of the Herbert & Rapp Co. will be concentrated eventually at Brockton, which will increase the weekly pay-roll at that place to \$3000.

—It is stated that the office in the shipping department of the Colchester Rubber Co. has lately been enlarged, and the number of men for loading goods on the cars doubled. The average weekly shipment will not now fall much short of 4000 cases.

—By a two-thirds vote of the stockholders of the Standard Co., of Brockton, Mass., the name has been changed to the Standard Rubber Corporation, the change taking effect on September 26. Business is reported very flourishing at the factory of this company. A local newspaper states that they have started twenty-five women stitching rubber garments at their homes, and are advertising for more for the same kind of work. In the new circulars Mr. B. F. Pennington, general manager of the company, has the additional title of vice-president following his name.

—The Glabuer Brass Manufacturing Co., Cleveland, Ohio, have moved to a new building erected especially for them at No. 88 River street. This building is four stories high, of brick, and will contain a factory for their brass work, with the latest and most approved machinery for turning out their specialties.

—According to the *Willimantic (Conn.) Journal*, the Colchester Rubber Co. have heaters for vulcanizing 9000 pairs of boots and shoes per day; employ 700 persons, a large proportion of whom are men; and pay out \$300,000 a year in wages and salaries. Since the advent of Mr. Watkinson as president the plant has been improved by the addition of a 300-foot building and the introduction of electric lights, reducing the danger from fire, and by the addition of many appliances and conveniences for doing business economically and rapidly. The consumption of rubber is two tons per day. The variety of shoes, "arctics," boots, and the like is very great and the number of lasts used exceeds 200,000.

—The well-known wine-colored coat which has been and is so popular, was brought out by Mr. Southwick, manager of the London Rubber Clothing Co., of Ashtabula, Ohio. Mr. Southwick uses special coloring matter for producing the desired shade, and has hit it so happily that he is able to guarantee the coats against fading, which is a common fault with colored rubber.

—The Western Linoleum Co., of Chicago, it will be remembered, were recently visited by a fire which destroyed a large portion of their mill. With true Western enterprise, however, they have erected a new plant and doubled their former capacity.

—As election time draws near, the rubber travelers wend their way homeward to register and vote for their favorite candidate. Whenever the business is dull on the road, the Knight of the Gripsack can always get up a breeze in a political discussion, and as he is a traveler and is liable to be in sections in which both parties have rather a rabid majority, his views and expressions always receive some recognition.

—The many friends of Mr. Silas H. Jenkins, formerly the southern representative of the Hodgman Rubber Co., and recently representing the interests of Messrs. Bierman, Heidelberg & Co., manufacturers of specialties in men's clothing, will be pleased to learn that he has returned to his first love, and is again numbered among the Hodgman forces. Mr. Jenkins, by his energy and push, and by maintaining the universal respect of his trade and fellow-travelers, had much to do in building up a large southern trade.

—The property of the Adamanta Manufacturing Co., of Salem, Mass., is offered for sale. It was here that what was known as "adamanta rubber" was manufactured, and as the machinery in part was rubber machinery, and as the plant is especially well located, it is possible that it would interest rubber manufacturers. The plant consists of a brick factory with a 100 horse-power Brown engine, and 110 horse-power Cunningham boiler, with other machinery, shafting, etc. In addition to the factory proper there is a large two-story wooden warehouse, with elevator, and a number of sheds and out-houses. The plant is situated on Salem harbor, with a wharf 257 feet long, and is next to the coal pier of the Philadelphia and Reading Coal and Iron Co. There is also track connection with the Boston and Maine and Lowell Roads. Henry W. Peabody, No. 70 Kilby street, Boston, is one of the trustees and has the matter of selling in charge.

—Charles A. Gump, of Dayton, Ohio, was recently in the East buying goods. Mr. Gump has a fine store, in which he carries mechanical rubber goods and mill supplies. He occupies the whole building for his business, three stories and a basement being crowded with goods and has one of the most prosperous general mill-supply houses in his section.

—The Imperial Rubber Co., of New York, report that the fall trade is opening in excellent shape, and a large business is expected.

—The Peerless Rubber Manufacturing Co., of New York, are getting some large orders from railways for steam-heating hose.

—The Abendroth & Root Manufacturing Co. have shipped within a month ten boilers to Cuba, each with a capacity of over 200 horse-power. The Cuban and other export trade of this company has always been a very large one.

—The demand for steam-heating hose from railroads is expected to be large this season. While a great many roads have adopted the new method of heating, the mileage in the country is very large, and will last for many years in the matter of new equipment. Steam-heating hose can be made to last three years, but the usage is severe, and it generally rots away after the first. The secret with each company is in the compound, which is zealously guarded, and the efficiency of the hose depends largely upon it. Some companies use two or more plies, others only one, both plans being well advocated.

—The Boston Belting Co. have commenced to take stock. The season has been with this company a very prosperous one, their requirements for duck taxing to the utmost the mill for which they contract the entire production, besides making large demands upon other manufacturers.

—George E. Austin, of the Imperial Rubber Co., is on an extended trip through Canada and the West.

—T. F. McCarthy, the New York representative of the Standard Rubber Corporation of Brockton, Mass., reports an excellent business in clothing, taxing the capacity of the factory to its utmost.

—Professional cyclists now use pacing horses to warm them up in races. It would seem as though ideas would never stop bubbling up when rubber has set the ball going. The bicycle-men have to use two horses, a relay of one coming on halfway, and then the horse is often beaten.

—A fault of the "self-healing" pneumatic tires is that after they have been used for some time they do not mend. The fault appears to be in the change in vulcanization that goes on with age, and as they have no valves they become worse than useless unless they have been very carefully made.

—The American Wringer Co. have abandoned their factory at Middlefield, Conn., transferring the work to Woonsocket, R. I., in pursuance of the plan suggested by the consolidation. It is expected that the new mill at Woonsocket will be ready for occupancy the latter part of this month, when the company will be enabled to furnish its own rubber rolls, which it has not done hitherto. The wringer business is very good at the present time; the export trade, however, is only fair, on account of the discouraging state of commercial affairs in almost every country abroad.

—The new Dunlop tire is easily repaired. The tube consists of an outer cover vulcanized to a woven canvas tube, and has an independent air-tube placed inside of the rim of the wheel. By a simple arrangement of wires the air-tube can be immediately exposed and repaired. It has no canvas flaps or cement in its formation.

—S. T. L'Hommiedieu, of the Columbia Rubber Works Co., New York, is on a trip to the factory at Akron, Ohio.

—A new motor that will undoubtedly interest large manufacturers because of its simplicity has just been brought out by the Packard Electric Co., of Warren, Ohio. Now that rubber and other manufacturers are more and more getting into shape to isolate different parts of their plants and to be able to run one department while another is shut down, the electric-motor should commend itself to them as the ideal motive power for conditions like these.

—The Aetna Rubber Mills, of Jamaica Plain, Mass., have shut down indefinitely.



—W. S. Ballou, of the Woonsocket Rubber Co., on his last weekly visit to New York said that business was excellent and that the factory was behind on its orders. There was a call for everything in the boot and shoe line, and a good many orders from abroad. This year's business is certainly destined to be prosperous.

—People in the Northwest use a great many rubber boots and shoes, judging from a single consignment to Kellogg, Johnson & Co., which consisted of 16 cars containing 6485 cases.

—Cement cans are articles in use in every rubber factory. It will interest manufacturers therefore to know that a special can is made for this purpose by the Sewing Machine Supplies Co., No. 105 Summer street, Boston.

—Marble flour is largely used in compounding certain rubber goods in the place of barytes. It is just as inert as the former and is known to the trade under the name of bastard barytes.

—Speaking of the large dividends formerly paid by rubber companies, a gentleman tells this following story: "A lady who had stock in the old Novelty Rubber Co., of New Brunswick N. J., received a dividend check, but returned it at once, accompanying it with a letter in which she said that she did not wish to sell her stock." If this story be true one might well wish that the good old times were back again.

—Mr. C. F. Parker, of Boston, who is manager of the Metal Last and Tree Co., is interested in what is known as the geometric drill,—a machine that will bore a hole perfectly square or indeed in any geometrical shape,—in any metal. It is claimed that the machine has a great future before it.

—J. O. Stokes, treasurer of the Home Rubber Co., Trenton, N. J., recently spent several days in New England visiting his Boston agency and purchasing supplies and machinery for the Trenton mill.

—A curiosity highly valued by the Candee Rubber Co. is an old arm-chair that was saved when their plant was burned years ago. It is now to be found in Superintendent Elliot's office.

—The Mason Regulator Co., of Boston, whose reducing-valves are so largely in use in the rubber trade, have issued a watch-case calendar for 1892-3, which is so arranged that it can be cut with a pair of shears into such a shape that it will fit into a watch-case and remain there. This they are mailing to their customers throughout the country.

—Studley Brothers, of Providence, R. I., have removed from No. 39 Westminster street to No. 35 of the same street.

—Edward W. Holt, well known to the rubber trade in New York city, has opened a fine store at No. 2 West Fourteenth street, near Fifth avenue. The store, although not a large one, is perfect in its appointments and has a fine assortment of rubber goods. The specialties of this concern are mackintoshes and liveries made up to order.

—George Green, a celebrated aeronaut, used India-rubber in a turpentine solution as early as 1818 in making his balloons, so that balloon-making is perhaps the most ancient branch of the rubber trade.

—The Hicks boiler, made in Providence, R. I., which is in use in a number of rubber factories, is said to be exceedingly durable. William B. Rider, a manufacturer in that vicinity, wrote to the manufacturers recently that a boiler made by them had been running thirty years without repairs.

—A rubber-manufacturer, in speaking lately of the Australian trade, said that he considered it as good as the most fastidious could wish. He had a traveler there who sold on practically the same terms as he does in the United States, and took large orders, their total loss on collections for one year being only \$70.

—The Elastic Tip Co., on Atlantic avenue, Boston, are doing a large business in bicycle-tires and general rubber supplies.

—The Cleveland Rubber Co. run twelve looms on woven hose, turning out 12,000 feet a day.

—Webster, the well known retail shoe-dealer on Washington street, Boston, says that his largest day's sale occurred during a heavy snow and rain storm, when he sold seventy pairs of the Boston Rubber Shoe Co.'s boots.

—It looks as if the fights that have occurred from time to time between the manufacturers of automatic sprinklers were about to cease. A consolidation of the principal manufacturers is talked of and will doubtless go into effect before the first of the year.

—While old rubber hose is purchased by junk-men to be ground over and made into reclaimed rubber, what little leather hose there is left, is sold to shoe-manufacturers, who make it up into boot heels.

—Another large new jobbing-house in Boston is that of the Childs Shoe Co., wholesale dealers in boots, shoes and rubbers, who are announced to open at No. 228 Congress street about November 1.

—In the windows of the Boston office of the American Rubber Co. and the National India Rubber Co., are large placards announcing "This store to let," indicating that the consolidation of various interests in the United States Rubber Co. is not far off.

—S. Shaeffer, who does the trucking for the Woonsocket, American and Wales-Goodyear people, in New York, says these are about as busy days as he cares to see.

—The Woonsocket Rubber Co. report that their new foothold—the "Newton,"—is selling well. It has a high upper, similar to the Storm Slipper.

—By the steamer *Caracas*, which arrived in New York on September 26 from Curacao, there were 360 pounds of Balata consigned to D. A. de Limas & Co.

—William Morse, New York manager of the American Rubber Co., visited Boston last week, spending several days there. Mr. Morse says that the factory is crowded with orders, the business being better than has been known for years.

—By the steamship *Newport* from Panama were 40,000 pounds of old rubber coming from San Francisco.

—The quarantine in Southern cities is fraught with mischief. A traveling man connected with the Stephen Ballard Rubber Co. (New York) was arrested in Texas and could not get free until he had telegraphed to New Orleans to friends who said he had been in the latter city so long as to preclude his being in New York during the cholera excitement.

—Silas H. Jenkins, formerly for many years with the Hodgman Rubber Co., has again become connected with that company.

#### INDIVIDUAL MENTION.

MR. GEORGE A. ALDEN, the well-known rubber importer, is the owner of an immense estate outside of Boston, in the town of Wellesley. It was known as the Baker estate, and a fortune was spent upon it by its former owner in landscape gardening, artificial lakes, and other improvements which serve to beautify it.

—Captain Henry F. Knowles, of the Globe Rubber Works, Boston, spent a week in Washington at the recent Grand Army reunion. It was the first vacation he had taken in many years.

—Wheeler Cable, president of the Cable Rubber Co., Boston, is an enthusiastic fisherman and the possessor of one of the finest Leonard rods that can be manufactured. When business will permit, he slips away either to the fishing grounds of Cape Cod or Charles river and usually lands his share of fish.

—Mr. L. D. Aps'ey, of the Apsley Rubber Co., Hudson, Mass., is a Republican nominee for Congress.

—The Hon. E. S. Converse, founder of the Boston Rubber Shoe Co., has been made a presidential elector on the Republican ticket, for the Seventh district in the State of Massachusetts.

—Mr. Willis Darling, of the Boston Woven Hose and Rubber Co., is back from Moosehead Lake, where he spent part of his summer vacation. Mr. Robinson, of the same firm, took his summer trip to Pike's Peak.

—The Hon. F. A. Magowan, of the Trenton Rubber Co., is talked of as a future Governor of New Jersey.

—Mr. Charles D. Cugle, well-remembered in Boston as a traveling salesman for the Conant Rubber Co., several years ago, and later manager of their branch store, in Hartford, Conn., but now located in Baltimore, in charge of the mechanical rubber department of the Messrs. Boyd, Jones & Co., is being congratulated by his many friends, in and out of the Monumental City, on being a father. The youngster is proudly described by his father as a young Democratic voter.

—Mr. George H. Hood, treasurer of the Boston Rubber Co., who recently met with a severe accident while out driving near his home in Brookline, was seen in New York a few days ago, walking with the help of a cane, but almost fully recovered from a severe sprain in the knee, received at the time of the run-away.

—C. S. Osborn, of the New Brunswick Rubber Co., spent a week in Boston, and then took two weeks' vacation in New England, whence he has just returned. He is now wondering how he is to catch up with accumulated business.

—Mr. F. Cazenove Jones, general superintendent of the New York Belting and Packing Co., is a lineal descendant of Captain John Paul Jones, of Revolutionary fame.

—Horace J. Fairchild, of the New York dry-goods firm of H. B. Claflin & Co., has been made chairman of a committee of reorganization of the affairs of the Brookhaven Rubber Co., at Setauket, L. I. He has also been elected president of a new company to succeed the old one, which is actively operating the mill at Setauket. It is stated on excellent authority that the assets of the old company are sufficient to liquidate all liabilities, and every creditor will be paid in full.

—T. W. Welsh, superintendent of the Westinghouse Air-Brake Co., has just received the patent for a triple-check case valve gasket. It is to be used only on the Westinghouse air-brakes. The special feature about this valve is that while it is molded of rubber, it has ridges upon the surface that prevent all leakage when the face of the valve is in contact with the metal seat.

—Mr. Robert Cowen, superintendent of the Boston Woven Hose and Rubber Co., is a trustee of the Manual Training School in Cambridgeport, Mass.

—Mr. Carlos Zarembo, a traveling passenger-agent for a Mexican railway, is touring through the United States in the interest of his road. He is the possessor of a very large area of rubber forest in the interior of Mexico.

—The recent lengthy articles in the Cleveland newspapers upon the rumored consolidation of the Chicago, Cleveland, and New York Belting and Packing Companies were the result of a newspaper war. In other words two rival papers, each wishing to outdo the other, drew on their imaginations and filled space regardless of facts. The rashest thing they did, perhaps, was to secure an old and poor photograph of Mr. L. K. McClymonds from a local photographer and reproduce it in one of the newspapers. The reproduction was so bad that few of Mr. McClymonds's intimate friends would have recognized him.

—Baron de Gondoriz is said to be in the market again at Pará, buying and speculating in rubber.

—Mr. B. T. Morrison, treasurer of the Reading Rubber Manufacturing Co., has just returned from a two-weeks' trip into northern Maine, where he spent the time very pleasantly shooting and fishing.

—Ex-Governor Augustus Bourn, formerly treasurer of the National India Rubber Co., now Consul General at Rome, is on his way home to the United States for a visit.

—Mr. J. Francis Hayward, of the Cable Rubber Co., and Mr. L. M. Monks, of Sage & Co., were among the interested spectators at the late hotly-contested polo games at Hingham, Mass.

—Mr. Frank D. Balderston, vice-president of the National India Rubber Co., has lately been on a hunting expedition in the northern part of Maine, beyond the reach of mails or telegraph lines.

—Capt. Harry E. Converse, of the Boston Rubber Shoe Co., and his wife, arrived at home on October 1 from their summer tour in Europe.

—Mr. H. C. Corson, of the B. F. Goodrich Co., Akron, Ohio, was in New York in the latter part of September to meet Mrs. Corson on her return from Europe.

#### OBITUARY.

RICHARD BROGAN, the well known rubber-man at No. 292 Grand street, New York, died suddenly on September 25. He was the first rubber dealer to introduce the "sandwich man" as an advertising medium in the streets of New York. He was bold and enterprising and had a variable experience in his lifetime.

—Mrs. Rachel Hutchinson Cook, mother of Frederick Cook, treasurer of the Woonsocket Rubber Co., died September 16, on Cumberland Hill, R. I., in her seventy-fifth year.

#### TRADE PUBLICATIONS.

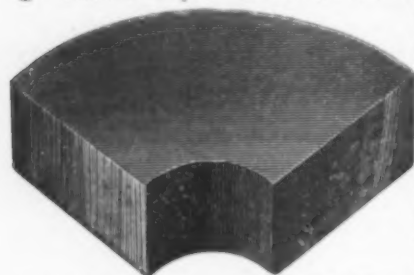
THE Gutta Percha and Rubber Manufacturing Co. (New York) have issued to the trade a new catalogue of their line of manufactures in rubber mats, matting, stair-treads, and rubber, cotton, and linen fire hose. The company make seven patterns of diamond, two of figured, and twenty-five of perforated door-mats. They also make a variety of pitcher- and cuspidor-mats in the diamond pattern; street-car mats in the perforated form; both perforated and corrugated barber-mats, besides an endless variety of reversible mats, corrugated matting, stair-treads, and bottle- and glass mats. Of hose they make the celebrated carbolized and the Ajax. Several pages of the catalogue are devoted to a list of fire equipment, such as reels, pails, pipes, couplings, spanners, hose-carts, etc. The catalogue is a duodecimo of 36 pages, and ought to be a very acceptable addition to the literature of the trade.

—The Atlas Rubber Co., of New York, have recently issued a folder describing their lines of goods, printed in Spanish for distribution in South American countries.

—A new price-list of horse covers manufactured by the Boston Rubber Co. has been received. The card is the work of the Forbes Lithograph Co. and represents a picture of Mr. Higgins's great race horse, Salvator, from the original picture in the possession of *Outing*, by the well-known horse painter, Mr. Henry Stull. The artist has caught the magnificent thoroughbred at his very best, and the work is in his happiest vein. The list does away with the old figures, and it is now easy to calculate at either a discount or at net figures. Being thus simplified, the list will no doubt be appreciated by the wholesale saddlery hardware and rubber trade. The card was designed by their New York representative, Mr. William H. Corner, Jr.

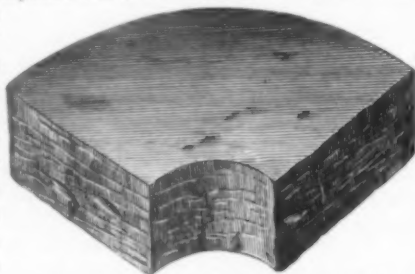
### A Rubber Compound that Really Resists Acids.

THE encyclopedias tell us that hard rubber resists acids and alkalis. Experience shows, however, that the resistance



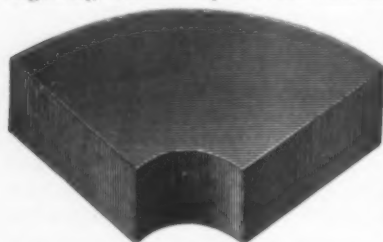
RUBEROID TREATED WITH SULPHURIC ACID.

is only temporary, and that the best of hard rubber is soon attacked, and in many cases quickly eaten away by acids and alkalis. Accepting this fact, inventors have been at work for a long time to make a rubber compound that should have greater resistance. As a rule most substances of an earthy nature have been relied upon to accomplish the desired result. In some cases they were helpful, but after all it was found that while the "dead matter" in the compound was often unharmed, the rubber that surrounded it was so weakened that the whole mass became porous and useless. It remained then for an inventor working on a new line to solve this difficult problem. His plan was to manufacture a



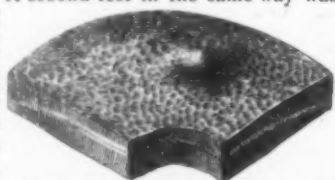
HARD RUBBER TREATED WITH SULPHURIC ACID.

rubber-like substance that should in itself be unaffected by acids, oils, and alkalis, and that, being compounded with rubber, should lend its qualities to the whole mass. A series of experiments that are partially illustrated by the accompanying engravings seems to prove that this has been accomplished.



RUBEROID TREATED WITH NITRIC ACID.

ber and vulcanized. A hard-rubber valve and a Ruberoid valve were then immersed in a bath of sulphuric acid 66° in strength and kept there for the same length of time. When taken out it was found that the hard-rubber valve had suffered badly, while the other was unaffected. A second test in the same way was tried with nitric acid of 43° strength, and a third with caustic soda of 25° strength. These were but a few of the tests, but throughout the series the Ruberoid showed its superiority in so marked a manner that rubber experts pronounced it of the utmost value in rubber-compounding. The illustrations show the results of two of the tests, but they hardly do justice to the dilapidated



The inventor has given the substance the name Ruberoid. In making the tests, ordinary hard-rubber valves were compared with valves of the same size made of the new compound, combined with gum rubber

condition in which the strong acids left the ordinary hard-rubber valves. Ruberoid is in weight and texture much like crude rubber. It is a dense black, and is already used in both hard and soft goods. It is manufactured by the Standard Paint Co. of New York, whose advertisement is found in another column. The Company have a record of many very interesting experiments tried by the leading rubber-manufacturers in the United States, and can furnish exact formulæ for its use in rubber-compounding.

### What May be Patented.

THE Washington *Chronicle* gives the gist of our patent laws in the fewest possible words as follows:

A United States patent will be granted to any person who has invented or discovered any new and useful art, machine, manufacture or improvement thereof, not known or used by others in this country, and not patented or described in any printed publication in this or any other country, before his discovery or invention thereof, and not in public use nor on sale for more than two years prior to his application, unless the same is proved to have been abandoned.

In this connection the word "art" means the process or method of producing an old or new result. If a method of doing anything contains one or more new steps, the process is new and patentable.

The word "machine" means any device or thing by means of which a mechanical result may be produced, such as a pin, a churn, or a locomotive.

The word "manufacture" means a made-up article, such as furniture, clothing, harness, and the thousands of things which are offered for sale.

"Composition of matter" means a chemical compound of ingredients, such as hard rubber, liquid glue, medicine, etc.

Patents may also be obtained for designs for manufactures and works of art, for three, seven, and ten years.

Trade-marks may be registered for any arbitrary sign or symbol which is not descriptive; the government fee is \$25. Such marks are the exclusive property of the registrar for thirty years, and the time may be extended.

A "label" is any descriptive tag, print, or impression to be placed upon any article or its case, and it may be registered for twenty-eight years. The government fee for a "label" is \$6; but if it contains any special mark or symbol, the office decides it to be a "trade-mark" instead of a label.

An extensive book on "How Not to Make Rubber Goods" might be compiled from the columns of the daily newspapers, which continue complacently to instruct their readers on this subject. Much information suitable for such a book is contained in a column article in a newspaper lately received at this office, wherein is set forth the statement that: "All rubber must first be vulcanized. In fact it is *para* and *not* rubber, and not fit for use, until vulcanized. This is a heating process which gives to the material its durability and elasticity."



## REVIEW OF THE RUBBER MARKET.

THE crude-rubber market at the end of the period covered by this review is largely under the influence of the price of Brazilian exchange, which has advanced from 10d. last summer,—and very rapidly of late,—until, according to late reports, it is 16½d. in Pará and 15½d. in Rio. Naturally in Brazil the price of rubber accommodates itself to this price, but holders there already are strong in their views, and the timidity which would prevail with declining exchange is wanting. The advance in exchange if maintained means a great deal to the commerce of Brazil, as its merchants can work on a better basis, and secure legitimate profits without the risk which generally accompanies the foreign transactions of a country whose finances are in the throes of inflation.

Old rubber in New York has sold as high as 72½ cents, and Island rubber "to arrive" is quoted at 67 cents. The deliveries of Pará during the month of September were 363 tons of fine and 151 tons of coarse. Manufacturers are buying with some freedom. The quarantines at the different ports have interfered to some extent with the movement of rubber, but more in the way of delay than in actual curtailment of shipments. This annoyance has not wholly passed by, and its recurrence in an acute form is only amenable to the success of the present efforts of the health authorities of New York to keep its port untainted.

Centrals are scarce, with Nicaragua scrap at 48 cents and the better grades at 50 cents. The market has been sold "to arrive" quite freely. In Africans the market is fairly supplied. The *Seguranza* from Pará was due in New York with 350 tons on board at the time of putting this report to press.

The visible supply of Pará rubber on October 1, 1892, compared with one month ago and one year ago, was as follows, amounts being stated in tons:

	Oct. 1, 1891.	Oct. 1, 1892.	Sept. 1, 1892.
United States.....	640	733	598
Liverpool.....	676	670	580
Pará.....	825	535	430
Afloat.....	1,210	715	480
Total.....	3,351	2,653	2,088

It will be remembered that one year ago, after the breaking up of the Vianna "corner," a large quantity of rubber was shipped to England from Pará, and from the United States to England and vice versa, in the settlement of bankers' hypothecations, and that fact explains the wide range in comparisons of the two years. Receipts from Pará have been generous this month, the movement of the new crop having fairly set in.

The statistical position of Pará rubber in New York is thus reported for September, 1892, as compared with the same month in preceding years:

## Statistics of Pará Rubber.

Stock of Pará here	August 31, 1892,	about	1,315,000 pounds.
Receipts	September	"	1,200,000 pounds.
Deliveries	September	"	1,065,000 pounds.
Stock	September 30, 1892.	"	1,450,000 pounds.
Stock	September 30, 1891.	"	1,600,000 pounds.
Stock	September 30, 1890.	"	850,000 pounds.

## Prices for September.

	1892.		1891.		1890.	
	Fine.	Coarse.	Fine.	Coarse.	Fine.	Coarse.
First.....	63	42	62	42	96	68
Highest...	67	45	64½	45	97	68
Lowest...	63	42	61	39	90	64
Last.....	67	45	64½	44½	90	64

The latest New York quotations are:

Pará, fine, new.....	68-70	Sierra Leone.....	24-40
Pará, fine, old.....	71-74	Benguela.....	46-47
Pará, coarse, new.....	45-50	Congo Ball.....	36-42
Pará, coarse, old.....	48-52	Small Ball.....	33-36
Caucho (Peruvian) strip.....	45-46	Flake, Lump and Ord.....	25-26
Caucho (Peruvian) ball.....	51-52	Mozambique, red ball.....	
Mangabeira, sheet.....	36-40	Mozambique, white ball.....	5-58
Esmeralda, sausage.....	50-51	Madagascar, pinky.....	40-42
Guayaquil, strip.....	40-42	Madagascar, black.....	28-43
Nicaragua, scrap.....	48-50	Borneo.....	175
Nicaragua, sheet.....	46-48	Gutta-percha, fine grade.....	115
Guatemala, sheet.....	38-43	Gutta-percha, medium.....	116
Thimbles.....	39-49	Gutta-percha, hard white.....	nominal
Tongues.....	35-40		

A late cable from Pará gives price of Islands at 3150 reis; Up-river, 3425 reis; Caucho, 2000 reis for Slab, and 2450 reis for Caucho Ball. Exchange is quoted at 16½d.

The quarantine at Pará against vessels from New York is deterring some of our steamers from going there, and thus delaying shipments, which is likely to make stocks of new rubber very short.

In regard to the financial situation Messrs Simpson & Beers, brokers in crude India-rubber and commercial paper, advise us as follows:

"Rates for prime single- and double-name rubber paper with four to six months to run have ruled firm throughout September at 6 @ 7 per cent. and the supply has been only moderate. Our city banks virtually withdrew from the market; now and then a bank would invest sparingly on something choice at full rate—preferring to accommodate their customers to their going outside. It looks as if gold exports were over for the year, the supply of commercial bills having largely increased of late. Out-of-town banks have absorbed most of the paper offered and they probably will continue to do so for some time to come."

The latest quotations for scrap-rubber are: Shoes, carloads, 3 cents; ordinary black, 2¼ @ 2½ cents; car-springs, 3¼ cents; white, 5 @ 6 cents; wringer-rolls, 4¼ cents. The demand has become brisk, succeeding the dull market prevailing in September.

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## THE RUBBER-GOODS TRADE.

WITH the subsidence of the cholera scare in the East, and a better knowledge of the extent of the crops in the West, business has resumed its sway, and has gained in all industries an impetus which bids fair to make the year 1892 one of mark. If it were not for low prices, it would be the banner year in dollars and cents, but it is a feature of the times—that high quotations for staple goods cannot be obtained even when the manufacturer may be pressed to deliver his wares.

Rubber-men are very busy. There is a large demand for boots and shoes, and manufacturers are far behind in filling details. It is believed that if the weather during the fall should prove rainy, the manufacturers will be unequal to the demand and a scarcity of goods will ensue. This might have the effect of making better prices for next year. Shipments westward have been very large, as usual before the close of navigation. There is a growing demand for the better qualities, people paying more attention to footwear now than has been known before in this generation. An increase in production has been made wherever practicable, but as this is difficult to do to any extent, all hands have to remain content with doing the best that can be done with the means at hand. Reports from the Pacific coast speak of good business; from St. Louis of good local and Southwestern demand; from Cincinnati, of a very urgent call, taxing jobbers to

keep pace with it; from Chicago, of a large influx of buyers in town; from the Northwest, of orders by the car-load;—in short there is a cry from every direction for rubbers.

In clothing there is about the same story to tell. The cloth-men foresaw the demand and fairly provided for it, but the mackintosh-maker is far behind, one of the largest factories in the country being two months in arrears. The future naturally depends much upon the weather, and should the winter prove unusually inclement, there is little hope of catching up until long after the holidays. There is a good demand for heavy goods, and also for the Inverness. From the Pacific coast there has been a large demand for clothing, such places as Portland and Tacoma sending in orders which create remark from old men in the business. The demand is so good from some sections that salesmen have been withdrawn, it being preferable to allow them to remain idle under salary than to solicit orders which cannot be filled.

The demand for mechanical goods is excellent. One of the largest concerns has just taken off a balance-sheet for the past six months, and finds that the transactions have been far ahead of any former period of six months in its history. The true test of business in this respect is the consumption of duck, and that has been one-third larger this year than usual. The railroads are now ordering largely for their winter needs, and if there are to be further large orders for equipment on account of the approaching World's Fair, some of the rubber-men are in for a good line of work during the next few months. For belting and packing the demand is more than usual at this season.

#### RUBBER IMPORTS.

THE imports in detail from Pará and other countries to the south of us since our last report have been:

##### PARÁ GRADES.

September 14.—By steamer *Vigilancia* from Pará:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Boston Rubber Shoe Co. . . . .	33,200	7,800	9,600	.....	50,600
Reimers & Meyer. . . . .	21,400	13,600	11,400	.....	46,400
New York Commercial Co. . . . .	22,500	4,300	8,900	.....	35,700
Lawrence, Johnson & Co. . . . .	10,700	1,800	18,600	.....	31,100
Shipton Green. . . . .	.....	.....	.....	14,000	14,000
Total. . . . .	87,800	27,500	48,500	14,000	177,800

September 28.—By steamer *Cyril* from Pará and Manáos:

Reimers & Meyer. . . . .	95,000	20,900	54,400	21,300	200,600
New York Commercial Co. . . . .	106,400	17,000	31,000	.....	154,400
Boston Rubber Shoe Co. . . . .	80,000	24,000	16,200	22,900	143,100
Laurence, Johnson & Co. . . . .	71,600	18,200	47,600	.....	137,500
Joseph Danigan. . . . .	.....	28,700	.....	.....	28,700
Hagemeyer & Brunn. . . . .	9,300	700	1,700	.....	11,700
Marcial & Co. . . . .	.....	.....	8,500	.....	8,500
G. Amsinck & Co.*. . . . .	3,000	.....	4,300	.....	7,300
Shipton Greene. . . . .	2,400	.....	.....	.....	2,400
Kuhnhardt & Co. . . . .	23,700	2,900	5,400	.....	32,000
Total. . . . .	391,400	92,700	188,900	52,700	725,700

##### OTHER THAN PARÁ.

September 10.—By brig *Carib*, from Honduras:

	Pounds.
Eggers & Heinlein. . . . .	1,689
W. R. Grace & Co. . . . .	269
H. W. Peabody & Co. . . . .	592
Total. . . . .	2,550

September 10.—By steamer *City of Alexandria*, from Mexican ports:

[From Vera Cruz.]

W. Loaiza & Co. . . . .	150
Seeger, Guernsey & Co. . . . .	1,080
E. Loraiz & Co. . . . .	180

\*From Maranhão.

[From Tuxpan.]

J. W. Wilson & Co. . . . .	250
Louis Montjo, Jr., & Co. . . . .	610
Total. . . . .	2,270

September 10.—By steamer *Colombia*, from Colon:

A. W. Rotholz. . . . .	580
Piza, Nephews & Co. (Panama). . . . .	1,342
[Ex <i>Santiago</i> from South American Pacific ports.]	
W. R. Grace & Co. . . . .	105
Herzel, Feldman & Co. . . . .	1,500
J. M. Ceballos & Co. . . . .	4,900
Total. . . . .	8,427

September 19.—By steamer *Alvo*, from Carthage:

Pim, Forwood & Co. (for London). . . . .	8,800
W. R. Grace & Co. . . . .	7,800
To order. . . . .	400
Total. . . . .	17,000

September 20.—By steamer *Yumuri*, from Mexican ports:

[From Laguna.]

J. M. Ceballos & Co. . . . .	600
A. C. Garcia & Co. . . . .	100
Seeger, Guernsey & Co. . . . .	350

[From Vera Cruz.]

F. Probst & Co. . . . .	100
H. Marquand & Co. . . . .	100
Total. . . . .	1,250

September 20.—By steamer *City of Paid*, from Colon:

[From Panama.]

Piza, Nephews & Co. . . . .	4,300
Hoadley & Co. . . . .	5,901
[Ex <i>Arequipa</i> , from South American Pacific ports.]	
Herzel, Feldman & Co. . . . .	2,400
J. M. Ceballos & Co. . . . .	4,100
To order. . . . .	1,700

[Ex *Laja*, from South American Pacific ports.]

Herzel, Feldman & Co. . . . .	2,600
J. M. Ceballos & Co. . . . .	3,200
[Ex <i>Quito</i> , from South American Pacific ports.]	

Hoadley & Co. . . . .	1,270
W. R. Grace & Co. . . . .	8,125
J. M. Ceballos & Co. . . . .	1,390
Andreas & Co. . . . .	2,860
G. Amsinck & Co. . . . .	16,218
C. Roldan & Van Schaick. . . . .	2,138
Munoz & Esprella. . . . .	3,583

[Ex *Central America*, from Costa Rica.]

J. Aparicio & Co. . . . .	1,466
A. P. Stout & Co. . . . .	1,346
Marcial & Co. . . . .	592

[Ex *Baracouta*, from Central America.]

J. Aparicio & Co. . . . .	4,079
Hoadley & Co. . . . .	2,409
Munoz & Esprella. . . . .	279
S. Sampe & Co. . . . .	82
Pomares & Cushman. . . . .	158

Total. . . . . 69,896

October 3.—By steamer *Athos* from Carthage:

C. Roldan & Van Sickel. . . . .	720
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October 6.—By steamer *Orizaba* from Vera Cruz:

Edward Burr. . . . .	600
Joseph Agostini. . . . .	425

Total. . . . . 1,025

October 4.—By steamer *Newport* from Colon:

[Ex-steamers *Acapulco* from Central American ports.]

H. Marquand. . . . .	600
W. Loaiza & Co. . . . .	2,409
J. W. Wupperman. . . . .	1,026
Munoz & Esprella. . . . .	206

[Ex-steamers *Imperial* from South American Pacific ports.]

Herzel, Feldman & Co. . . . .	1,000
J. M. Ceballos & Co. . . . .	14,000
To order. . . . .	3,800

Total. . . . . 23,041

